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AUTHOR Mitman, Alexis L.; Lambert, Vicki
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ABSTRACT

The cases in this book, based on classroom observations and interviews with principals and key teachers at 17 California middle schools, focus in depth on middle-grade reform in the classroom. Organized in four chapters, the cases look at four critical areas of curriculum and instruction: (1) heterogeneous grouping; (2) cooperative learning; (3) active learning; and (4) interdisciplinary instruction. In each chapter, an overview is followed by stories from four or five schools that have grappled with the given reform. The overview consists of background about the particular reform, a table summarizing key features across sites, observations that analyze those features, and a set of questions for teachers to consider as they think about their own classroom or school. The goal of the overview is to illustrate the complexity and multiple dimensions involved in filtering the change process through each school setting. Then the history of implementation at the particular site is recalled; current practices, including specific classroom examples of the reform, are described; and the continuing issues and challenges the reform poses for the school are addressed. (18 references) (MLF)

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INSTRUCTIONAL CHALLENGE

A Casebook for Middle Grade Educators

Alexis L. Mitman

Vicki Lambert

FarWest Laboratory

C·L·M·S

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A Casebook for Middle Grade Educators

Alexis L. Mitman

Vicki Lambert

January 1992

Far West Laboratory
for Educational Research and Development

California League of Middle Schools

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Preface

It's one thing to talk about changes teachers can make. It's another to let teachers see how different instructional strategies actually work. The cases in this book, based on classroom observations and interviews with principals and key teachers at 17 California middle schools, focus in depth on middle grade reform in the classroom. These cases look at four critical areas of curriculum and instruction: heterogeneous grouping, cooperative learning, active learning, and interdisciplinary instruction.

During the past decade, the momentum for educational reform has led to a significant re-thinking of middle grade education, described in 1989 by the Carnegie Council on Adolescent Development as "potentially society's most powerful force to recapture millions of youth adrift and help every young person thrive during early adolescence." Two documents — *Caught in the Middle: Educational Reform for Young Adolescents in California Public Schools* and *Turning Points: Preparing American Youth for the 21st Century* — have provided state and national blueprints for middle grade restructuring, and a number of efforts to act on these recommendations are well underway.

In California, 10 regional networks of middle grade Partnership and Foundation Schools and a second group of 11 regional networks of middle grade Partnership Schools have been established. Their overall goal is facilitating the evolution of "state of the art" middle schools. Also, every middle level school has been offered the opportunity to secure planning funds under the School Improvement Program (SIP). And the state has mapped out clear accountability guidelines in the *Quality Criteria for Middle Grades: Planning, Implementing, Self-Study, and Program Quality Review*. This document provides standards against which a middle school's program is to be compared, first through a self-study involving the school community and then by an outside Program Quality Review team.

These changes are exciting because they aim to enrich the school experience for students at a pivotal point in their lives. While the middle school concept is based on a philosophy rather than a set of essential elements, effective middle schools consistently tend to include the six features deemed critical by William Alexander in 1987: an interdisciplinary organization; an adequate guidance program including teacher advisory; a full-scale exploratory program; a broad curriculum encompassing personal development along with basic knowledge; varied instructional practices; and continued orientation and articulation for students, parents, and teachers.

Each of these features has organizational and instructional implications. Though certain organizational characteristics must precede instructional change, their existence alone doesn't doesn't seem to guarantee it. Middle level teachers enthusiastic about the new reform agenda want and need resources that translate abstract principles into concrete practice. This casebook aims to reveal the "nitty gritty" of everyday instruction in schools dedicated to serious reform. An essential resource to middle level practitioners, it chronicles the inspiration, diligence, commitment, and success of classroom professionals dedicated to giving young adolescents a substantive educational experience.

— Carl L. Zon, President
California League of Middle Schools
June 1991

Acknowledgments

Staff at Far West Laboratory first conceived of this casebook as a way of responding to the need expressed by middle grade educators to share with each other their problems and successes while implementing a challenging range of recommended instructional reforms. The California League of Middle Schools (CLMS) volunteered its support, and considerable credit goes to the CLMS Board of Directors for shaping the book's approach.

We are extremely grateful to the administrators, teachers, counselors, parents, and students of the 17 participating middle schools for their generosity and forthrightness, which made each case a realistic portrayal of their efforts. We also wish to thank the administrators of more than 62 other California middle schools who participated in the casebook survey process. These professionals provided valuable information to guide our work; we regret that limited resources precluded further study of these sites.

We wish to thank certain Far West Laboratory staff members for their valuable contributions: John R. Mergendoller and John Thomas (who have subsequently left the Laboratory for other positions) provided conceptual vision and direction; Nikki Filby (who directed the development of the companion casebook, *Middle Grades Reforms: A Casebook for School Leaders*) contributed impetus and ongoing feedback; James Johnson, Joan McRobbie, and Joy Zimmerman lent their editing expertise; Fredrika Baer handled desktop production; and Rosemary De La Torre provided administrative assistance. Design is by Patricia Christen.

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Introduction

A Focus on Instruction

The great current interest in middle grade instructional reform has prompted numerous recommendations from various educational constituents. Middle school educators around the country are engaged in diligent efforts to bring about and institutionalize more student-centered classroom practices, since school experience in the early teen years can often ignite — or dampen — a student's academic aspirations and enthusiasm.

Our interest in middle grade reform reflects our belief that what students learn in school is most directly influenced by the teaching activities that occur day to day in the classroom. Instructional reform is thus a high priority. This casebook examines in detail the implications of four practices widely advocated for the middle grades: heterogeneous grouping, cooperative learning, active learning, and interdisciplinary instruction.

The book's purpose is to capture and share the process of change as it is taking place in 17 middle schools. We believe other practitioners can gain valuable insights from these real-life examples and from participants' reflections on them, particularly in three respects. First, the cases aim to convey a broad understanding of each reform and how it is translated into practice at a given school site. Second, they are intended to stimulate thinking about implementation options and enable other educators to better anticipate and avoid or overcome common obstacles. And third, the cases should inspire confidence that these reforms are indeed feasible and beneficial. Implementation of all four reforms rests primarily with teachers. Of course, each is much more likely to take shape if fostered within a school climate where change is planned and supported. A companion casebook, *Middle Grades Reform: A Casebook for School Leaders* (Filby, Lee & Lambert, 1990), looks at important features of the organizational environment. Drawing from both research on school change and the experiences of California educators, that book uses the metaphor of a ship, captain, and crew taking a nautical journey to give the reader an easy-to-grasp framework for the issues involved in leading a school through the process of long-term change.

How This Casebook is Organized

This casebook is organized in four chapters, one for each reform area. In each chapter, an overview is followed by stories from four or five schools that have grappled with the given reform. The overview consists of background about the particular reform, a table summarizing key features across sites, observations that analyze those features, and a set of questions to consider as you think about your own classroom or school. The goal of the overview is to illustrate the complexity and multiple dimensions involved in filtering the change process through each particular school setting.

While each school has its own rich and unique story, all the cases follow the same general progression. First, we concentrate on the history of implementation at the particular site. Second, we describe current practices, including specific classroom examples of the reform. Third, we address the continuing issues and challenges the reform poses for the school.

California Role

We chose schools in California because so much reform activity is occurring in that state. Four major forces have accelerated middle grade reform in California. First, the California Department of Education (CDE) issued *Caught in the Middle*, a blueprint for broad-based, middle grade reform that includes numerous specific recommendations.

Second, the CDE actively supports two networks of schools that are committed to carrying out the reforms of *Caught in the Middle*. One network, founded in 1988, links Foundation and Partnership Schools in 10 geographic regions covering the state. Each has a designated hub, or Foundation school, that takes primary responsibility for regional coordination and assistance. Each Foundation school has nine to 12 affiliated Partnership schools. The other network, founded in 1990, expands the number of schools with Partnership status. An additional 111 schools are divided among 11 state regions. Within each region, schools set common goals and share expertise and resources. Presently, a total of 226 schools are involved in these two networks.

A third way that CDE supports middle grade reform is through its quality criteria. Documented in *Quality Criteria for Middle Grades* (California State Department of Education, 1989), these criteria are drawn from *Caught in the Middle* and state guidelines on curriculum. State funds from the School Improvement Program (SIP) are made available to any middle school willing to embark on a conscientious process of meeting the criteria. Doing so involves four steps: planning, implementation, self-evaluation, and evaluation by an outside team.

A fourth catalyst for middle grade reform in California is the California League of Middle Schools (CLMS), a professional organization serving approximately 14,000 practitioners through individual and institutional memberships. CLMS is devoted to encouraging the implementation of middle grade reforms and sharing of middle grade research, ideas, and training.

Site Selection and Visits

In soliciting potential participants for this casebook, we sent letters to members of the Foundation and Partnership School Network and CLMS. Eighty-three middle grade practitioners responded (primarily principals, but also some teachers and district administrators). All indicated interest in the project. Using this initial list, we identified 79 middle grade schools as candidates for study. Extensive phone interviews with each school followed, revealing schools had highly developed reforms that had been in place for some time.

Four or five schools were selected in each of the areas of heterogeneous grouping, cooperative learning, active learning, and interdisciplinary instruction based on their progress and expertise in that area. We were mindful of representing California's economic, geographic, and ethnic diversity. Three of the 17 schools serve higher socioeconomic (SES) populations. Eight serve middle or mixed SES populations, and six serve lower SES populations. Eight are in northern California, with the remainder spread across the central and southern part of the state. Nearly all have substantial proportions of ethnic minority students. The chart on p. 3 presents the demographic characteristics of the 17 schools, including grade configuration and school enrollment.

We arranged two-to-three-day visits at each site for extensive data collection. We interviewed administrators (e.g., principals, assistant principals), teachers, students, and other key people; observed classes where instructional practice demonstrated reform; and collected sample materials. We then used our audiotapes and notes to shape a written case for each school.

Suggested Strategies for Reading this Casebook

The casebook can be used in a variety of ways. The ambitious reader, for example, can gain much by considering all four chapters together. A thorough reading provides not only a good foundation in these four middle grade reforms but the opportunity to see how each relates to the other three. Such insight is critical at each stage of instructional reform. For instance, if your school is just embarking on middle grade reform, you'll be equipped for careful reflection about which reform area(s) might make the most sense as a starting place.

At another level, each chapter is designed to stand as an independent piece. For example, the reader particularly interested in how other schools

Chart: Demographic Characteristics of the 17 Middle Grade Schools

School	Enrollment	Grades	SES	% Minority	Years implementing the targeted reform	# of the four reform areas being attended to
HETEROGENEOUS GROUPING						
Willard	500	7-8	avg*	68	8	4
McKinley	730	7-8	avg	55	3	3
Sequoia	1,000	6-8	avg	10	5	3
Talbert	540	6-8	avg	23	4	1
COOPERATIVE LEARNING						
Piedmont	970	6-8	avg	63	5	3
Benicia	930	6-8	high	5	3	2
Turlock	1,260	7-8	avg	5	5	1
La Vina	310	K-8	low	90	4	2
ACTIVE LEARNING						
Ben Franklin	480	7-8	low	79	3	3
Burlingame	600	6-8	high	27	3	3
Margarita	500	6-8	avg	45	2	2
De Anza	720	6-8	low	39	5	2
Hewes	770	6-8	high	10	3	2
INTERDISCIPLINARY INSTRUCTION						
Buchser	1,300	6-8	avg	50	3	3
Fort Miller	870	7-8	low	88	2	3
Sparkes	670	4-8	low	60	2	1
Chaparral	1,250	6-8	high	47	2	4

*includes mixed SES

have gone about implementing heterogeneous grouping can turn to that specific chapter.

Whatever your purpose, we recommend beginning with the chapter overview. Besides being an organizer, each overview also offers background on the given reform and a framework for thinking about the chapter's cases. More important, each presents a series of reflections and questions to stimulate in-depth analyses of the cases and—ultimately—to help the reader apply the specifics of the given reform at his or her own school site. Next, read each of the cases in the chapter. Then return to the overview as a summary and guide to help you synthesize what you've read.

HETEROGENEOUS GROUPING

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CHAPTER 1

Heterogeneous Grouping

HETEROGENEOUS grouping is an instructional mandate for equity — an effort to ensure that all students have equal access to what a school has to offer. It requires that middle schools abandon the long tradition of tracking — i.e., "identifying and grouping students for instructional purposes according to presumed ability and/or demonstrated academic achievement" (California Office of Middle Grades Support, 1987, p. 19).

Heterogeneous grouping implies an opposite approach. Students are assigned to classes with no direct reference to ability differences as measured

by standardized tests, teacher observation, or other similar criteria. Many further claim that heterogeneous grouping is best accomplished not by ignoring student achievement levels in class scheduling but instead by purposely attempting to balance the mix of students in each class so as to represent the school's overall composition.

Although research has not produced conclusive proof that heterogeneous grouping at the middle grades enhances student achievement, there is compelling human evidence to suggest that schools should try this means of eliminating tracking.

Those who favor tracking have long argued that homogeneous classes allow teachers to instruct according to students' differing needs, resulting in higher achievement for all. But proponents of heterogeneous grouping assert that tracking damages lower achievers in ways that cannot be adequately documented by a few test scores: "Time and again, young people placed in lower academic tracks or classes, often during the middle grades, are locked into dull, repetitive instructional programs leading at best to minimum competencies. The psychic numbing these youths experience from a 'dumbed-down' curriculum contrasts sharply with the exciting opportunities for learning and critical thinking that students in the higher tracks or classes may experience" (Carnegie Council on Adolescent Development, 1989). That such academic inequities indeed exist in tracked schools has been persuasively documented (Oakes, 1985).

At the very least, heterogeneous grouping should involve lower (and middle) achievers in a more interesting and challenging curriculum. These same students also appear to benefit from the example set by higher achievers. Higher achievers, in turn, may derive extra rewards from opportunities to lead and instruct fellow students.

These scenarios assume that teachers will provide a relevant curriculum and also assure high levels of student participation by using such approaches as cooperative and active learning. Further research is needed to show whether these practices result — as intended — in higher achievement, since most existing studies predate the rise of new teaching approaches and ignore instruction as an intervening variable.

"Detracking" requires structural changes such as altering course labels, class schedules, and the ways students get assigned. These alone can cause tumult. But the real challenge begins when students enter the classroom, and that challenge rests with teachers. Hetergeneous grouping makes teachers rethink their educational philosophies, course content, means of instructional support, and instructional techniques and styles. The cases in this chapter illustrate how four different faculties have responded to this tall order.

Contrasting the Cases

Table 1 summarizes key organizational and instructional characteristics of the four cases. The pattern of similarities and differences suggests a number of things that educators implementing heterogeneous grouping at a school might consider, including the following observations and questions:

Observation: In all four cases, not one school has yet been able to heterogeneously assign students to all basic academic classes. This is true even at Sequoia and Willard, where detracking began five and eight years ago, respectively. The perception is that students with differing abilities are most difficult to mix in math classes. But retaining tracked math classes tends to affect the scheduling of other academic classes, even when conscientious effort is made to counter the effects. GATE and "honors" classes also are relatively difficult to absorb into an equitable schedule.

- Why is it so difficult to "detrack" an entire school schedule when, from a purely administrative point of view, total detracking would be easier to accomplish than retaining a few tracked classes? How does school size affect the dynamics of scheduling, especially when one or more tracked subjects still exist? If you were to begin the process of detracking at your school, what would be the most effective method? For example, would you opt for a gradual or quick process? How would you determine what subject areas to begin with?

- Schools that are very small (e.g., a K-8 rural school) usually have no choice but to employ heterogeneous grouping. What, if any,

Table 1: Heterogeneous Grouping Comparisons Among the Four Schools

WILLARD	MCKINLEY	SEQUOIA	TALBERT
Organizational Attributes			
Humanities grant motivated principal and humanities teachers to begin detracking	Superintendent and local board of education recommended detracking	Cooperative learning training motivated principal and teachers to begin detracking	Detracking motivated by principal's middle school philosophy and staff consideration of *Caught in the Middle*
Immediate detracking of humanities core; other subjects phased in; all except math eventually detracked	Detracking of most classes took place in second year of plan except math and one "honors" core per grade	Immediate detracking of all basics; math tracks reinstated one year later; 7th and 8th GATE students meet before school begins; 6th GATE students are pulled out once a week	Immediate detracking of all basics except 7th and 8th grade math
Principal is stalwart advocate of heterogeneity and supports teacher adjustment with resources and training			
Continuing challenges from board and parents to reinstate more tracking		Parental pressure to maintain GATE and tracked math	Parental pressure to maintain tracked math
Instructional Attributes			
Backup classes in reading, math for lower achievers	Smaller class sizes and extended core periods		Use of core periods and 6th grade teacher teams
Support from adult and peer tutors, homework center		Support from peer tutors and study teams	
High level of teacher coordination and control over curriculum	Teachers "over-plan" curriculum to accommodate higher achievers		Teachers create more flexible assignments
Conscious use of techniques to motivate and involve students, especially cooperative learning			

are the implications of this for larger schools?

Observation: A move to heterogeneous grouping begins with an administrative decision. Nearly all teachers will be affected. While principals at the four schools sought to maximize teacher buy-in before starting the process, many staff remained ambivalent or opposed as the change was initiated. Most, but not all, of these reluctant teachers were "converted" once they saw changes in student behavior and performance that seemed associated with the switch to heterogeneous grouping.

- What factors might make a teacher at your school unwilling to support the move to heterogeneous grouping? Consider each and suggest measures that could prevent or minimize negative impact. Should the decision about detracking take into account that many initially reluctant teachers do change their minds? Could these teachers become resources at their own and other schools? How?

- What, if any, critical mass of support should a principal have before mandating the change to heterogeneous grouping?

Observation: When teachers at the four schools reflected on the most salient benefits of heterogeneous classes, many cited improved motivation, participation, and achievement among students who had previously been identified as lower achievers. They attributed this to increased academic opportunities, collaborative work with other students, and exposure to positive role models, both social and academic.

- While many teachers readily testify to ways that students benefit from heterogeneous grouping, they've probably given less thought to the reform's impact on their own professional lives. How might the assignment to teach heterogeneous classes affect a teacher's professional growth and morale? How might this impact differ according to previous assignments (e.g., a teacher who once taught honors classes versus one used to working with remedial classes)?

Observation: Heterogeneous grouping evokes a strong political reaction from two influential groups — parents and local boards of education. In all four cases, parents have exerted successful pressure to maintain some classes for higher achieving students. In two of the schools, the degree of board support fluctuates, depending on membership and/or parental pressure. Controversy is heightened when ethnic and socioeconomic distinctions are perceived as related to former track assignments.

- What are the best ways to educate school boards and parents about heterogeneous grouping? Once a school staff has opted for a predominantly heterogeneous program, how can it best prepare for vacillating public opinion and unpredictable levels of support?

- Many teachers in ethnically diverse schools seem to develop a particularly strong personal commitment to heterogeneous grouping because of its equity goals. Does a teacher's commitment to equity have implications for communication with students, parents, and others? In what ways? What else might be affected?

Observation: In response to heterogeneously grouped classes, some teachers in all four schools have either added cooperative learning to their repertoire of instructional strategies or expanded their use of it. Many, however, have not made dramatic changes in instructional practice but are accomodating heterogenity by altering the content of their lessons, establishing greater relevance for that content, and expanding the range of student assignment options.

- What advice would you have for a teacher of tracked classes who uses more traditional instructional approaches and is about to start teaching heterogeneously grouped classes? Which instructional methods are likely to be most effective? Why? Do you think direct instruction has an important place in the heterogeneously grouped classroom? When would it be most effective? If teachers use it, are there any potential drawbacks for students that they should be especially sensitive to?

Backing Up High Standards: Willard Junior High School (Berkeley)

Willard Junior High occupies a large portion of a block bordered on one end by a busy commercial street and on the other by the beginnings of an attractive residential neighborhood that continues up into the hills. Enrollment — slightly fewer than 500 seventh and eighth graders — reflects the economic and ethnic diversity of the community. The student population is 53 percent black, 32 percent white, eight percent Asian, and five percent Hispanic, with the remainder a combination of other ethnicities. While some students come from upper-middle class homes, others live in impoverished conditions where malnourishment, care by siblings, or exposure to trade in illegal drugs are all too common. Most classes are taught in one large, concrete, split-level building. The school also has an administration building, an auditorium and fine arts complex, a gymnasium and pool complex, and several portable classrooms. Willard has been selected as a Middle Grades Partnership School.

Dates of Visit: May 7 & 9, 1990. Principal: Christine Lim.

"In our classes, the lower people are challenged by the higher people who are trying to learn. The lower people say, 'They're learning. I can be just as good."

"When I explain something to someone, it helps me understand it more. In our classes, whoever understands teaches the others."

"People who are for tracking say, 'The high achieving students aren't learning enough.' That's bull. In this school, they give the most advanced work to everybody, and everybody is pulled up."

"Here they're saying, 'We'll gear you up so you can do well and maybe get into high tracks in high school.'"

"Tracking puts a limit on your ability to do things. In a lower-track class, you would mostly be learning the same stuff over again. And the whole point of going to school is to expand your knowledge. If this school were tracked, people in higher-track classes would have a complete advantage."

— Typical comments from Willard students

Taking the Plunge

Heterogeneous grouping was introduced at Willard in 1982. It was a key aspect of the school's plan for carrying out its Demonstration Program in Reading and Humanities under a new California State Department of Education grant. The grant had quickly set several forces in motion. First, faculty decided to concentrate on developing a new humanities (English and social studies) core, including writing their own literature-based curriculum. Second, given low test scores and observations of poor self-esteem among lower achievers, faculty committed to the immediate "detracking" of the humanities core. Third, faculty put in place a unique support structure to enable lower achievers to participate in the core. This structure allows for such things as adult tutors in the English classes. But its main feature is the "reading backup" class for students who are at least two years below grade level on their CTBS reading scores. Taken in place of an elective, these classes have students study and map the readings that will be covered a week later in English. Special education students also receive this curriculum.

Finally, the grant enabled the faculty to initiate retreats. Each year before school starts, most

faculty meet for several days to share and shape new strategies and policies.

Some Resistance; Much Support

Detracking the humanities core had strong repercussions. "Many parents of high achieving students formed a Greek chorus and bemoaned the potential loss of standards within the class," remembers Willard's then-principal. Not surprisingly, some of these parents pulled their children out of the school. One humanities teacher also resigned. Most humanities faculty, however, were excited and dedicated to instituting the change. The adult tutors were hired promptly. In the first year, teachers reduced their teaching load by one class, using the time instead to have a common planning period.

Since Willard began detracking, transfers from private schools have increased by 13 percent.

"There were lots of perks involved in getting the staff ready," says Ms. Lim, the principal since 1986. The change also had strong board support. "Fortunately, we had a board very committed to the lower achieving student. So they went ahead, despite resistance."

Today, mathematics is the one subject area that remains tracked. In the rest, the method for balancing classes relies on teacher ratings. Academic core teachers or previous sixth grade teachers rate students as high, medium, or low performers in English and history. Students who need reading backup have an additional designation based on CTBS scores. A specially designed computer program then schedules students and classes so as to maximize balance. The school's demonstration program coordinator then makes some final adjustments.

While Willard no longer has the luxury afforded by 1982's start-up funds, it continues to receive demonstration program money. Also, city voters passed a tax override measure several years ago to raise additional education funds. Ms. Lim reports that these funds have been a vital help in preserving program quality, especially by allowing Willard to reduce class size to an average of 27.

Willard is now perceived as a very successful detracked school, she notes proudly. That reputation has greatly eased her dealings with parents. She can answer concerns about high achieving kids by saying that there's a fast-track program in all classes. "I give them the facts: our classes are heterogeneously grouped, and your child will be a high, medium or low. I assure them that all classes are balanced and all students have equal access to the same instructional program." She cites clear evidence that parents are impressed. "Three years ago, 19 percent of new registrations were from private schools. The following year it was 22 percent, and this year it's jumped to 32 percent. Forty-eight transfers already have enrolled for next year — all from private schools."

Building the Humanities Core

The instructional program of the humanities department, the showpiece of Willard's heterogeneous approach, is by now second nature to the faculty. Its smooth operation belies the level of effort and coordination it requires.

The program is rooted in faculty consensus about what will be taught. Eight years ago, teachers decided that English would revolve around a specific set of novels. For example, in seventh grade, students read *Swami*, *The Good Earth*, *Sound of Waves*, *Romeo and Juliet*, *Ivan the Fool*, and *Walkabout*. For each novel, groups of English teachers have written an extensive study guide which all teachers are expected to follow (including the reading backup teachers who use them in conjunction with a special "Willard Reading Program" guide.) The 50-page guide for *Romeo and Juliet* includes a reading schedule, background about Shakespeare, a template for mapping key aspects of the play, and a number of discussion guides, project suggestions and journal topics. (See attachment for two sample pages.) Exercises in each guide are consciously designed to engage students in more complex processing of information.

Social studies teachers coordinate their topics with English. When seventh graders study Tolstoy's

Ivan the Fool, for example, they simultaneously do a Russian history unit. Every year the humanities teachers prepare a calendar that specifies when the various topics get taught. Minor adjustments are made as the year progresses. Such a tightly structured curriculum is critical, explains the English special education teacher. "Right now, the seventh graders are all reading Tolstoy and the eighth graders are reading Steinbeck. Since I, for one, have kids from all different English classes, it would be impossible to back them up if they were all reading different books."

Though the English teachers are quite pleased with the interface between the regular and backup classes, they are aware that the backup class is itself a form of tracking. For that reason self-esteem building is an essential part of the backup class, and teachers feel it's been effective. While they've had some disappointments — students who appear to have "topped out" where they are — stories of successful transition to regular English classes predominate. Recounts one regular-class teacher: "When I first introduce a book like *April Morning*, I'll say, 'Now this is a famous book by Howard Fast. Some of you may have heard of it.' Hands shoot up among the special education and reading backup kids who have studied and mapped this reading a week earlier. The high academic kids don't know what's going on. One time, a brilliantly verbal young man from special education said, 'Oh yes, this is a story about someone our age who is going through his rite of passage in the first 24 hours of the Revolutionary War.' Whoo! Those high academic kids were outflanked and just astounded."

Regular English teachers have worked hard to handle the heterogeneity by using the special techniques mentioned earlier — e.g., cooperative learning or extra assignments for high achievers. One teacher uses her daily seating charts as a kind of checklist to ensure that she's called on all students, gearing questions to each one's abilities. Meeting so many needs is unquestionably a challenge, but these teachers don't find it daunting. "With all the levels in one classroom, their different needs occur at different times," said one. "So you actually can get to them all."

Seventh Grade English: Teasing Apart Tolstoy

This lesson illustrates high academic expectations (content is sophisticated) and a high level of participation across the class make-up (primarily black and white.)

Today, 23 students are seated in rows in Ms. E's English class. As class begins, nearly all take out their binders and open them to their log entries. Ms. E asks students to share recent entries with a neighbor. They shuffle binders across desks. After a few minutes, she announces that when she calls roll, each student should tell her how many log entries they have completed.

Following roll call, Ms. E announces tonight's homework assignment: a "reflection" type of log. She then begins today's lesson: a continuation of Section 9 of Tolstoy's *Ivan the Fool*. All students take out their paperbacks. Most get out their novel "maps" as well.

Ms. E begins a fast-paced recitation, quickly establishing a pattern whereby she paraphrases or reads key lines out loud, then asks a series of questions. All but a couple of students appear very attentive; participation is good. The teacher sometimes welcomes a chorus of answers; sometimes she designates who she wants to respond. At times she signals some of her frequent volunteers that they should hold back to give others a chance.

Here is one segment near the beginning of the lesson:

Ms. E (looking at her book): One of his ministers came to Ivan and said there's no money to pay salaries. Ivan responds, "Don't pay them." Now, listen to this: "But the people will stop serving." What does "serving" mean here?

Several Students: Working.

Ms. E: What kind of working?

Mike: Slave work.

Ms. E: Sort of. What kinds of things do these servants do?

Jan: They bring your meals.

Sue: They wait on you.

Ms. E: And do for you what kinds of things?

Jim: What you're supposed to do.

Ms. E: Things you should do yourself. Thank you very much. "Then, let them stop serving," says Ivan. Now listen to this line. "If they stop serving, they will be free to work." Write down, "They will be free to work." Where are you going to write it? Jim?

Jim: Under Tolstoy?

Ms. E: Right. Under Tolstoy's philosophy [referring to a section of their maps]. What does it mean to be free to work?

Karen: You wouldn't be idle.

Ms. E: And what else? Come on. Figure it out. If you're free to work, what kinds of things will happen to your life?

Carol: You'll be happy.

Ms. E: You'll be happy. You won't have a big belly and be idle. You'll sleep at night — all those things. You're not working for things that are not needed. Okay... "People came before him to be tried. 'He stole my money', said one. 'Well, why not?' said Ivan. 'That shows he needs it.' [Class laughter.] Everyone recognized that Ivan was a fool. 'They say you're a fool,' his wife said to him. 'Well, why not?,' said Ivan. [More laughter.] His wife thought and thought about this, but she too was a fool." Boy, you're not kidding — read the next line. "'Why should I go against my husband?' she said 'Where the needle goes, the thread must follow.'" Now, that actually is sort of a nice little metaphor. What does it mean?

Several Students: Ivan's in charge.

Ms. Eastmoor: Right. Pretty Freudian, too. So, therefore, write it down under "language."

For another 30 minutes, the teacher leads the class through several more sections of the book. As class draws to a close, she reminds them that Tolstoy is showing how the logic of "the fool" is not what they are used to and yet it is indeed very logical.

Commitment Based on a Vision of Students

Willard staff have a very personal kind of commitment to heterogeneous grouping. They've clearly given serious thought to how students respond to educational environments. Articulating the thinking that prevails at the school, Ms. Lim describes how changing the classroom climate has benefited students at every level. Tracking, she notes, puts all the poor role models in one class. Moreover, teachers assigned to such a class tend to go in with lower expectations which lead them to teach repetitive, drill-type lessons. In heterogeneous classes, low achieving students have access to a more thought-provoking, challenging program.

But it's average kids, she says, who probably get challenged more than anyone when a school is detracked. Since placement in tracks may be based on "very little information, just some judgments" — a student with much to offer may be labeled average only because he's quiet and slipping through the cracks. "Your average kid is the one you really don't know. They don't shine and they're not a deficit." A heterogeneous class allows that child an unprecedented chance to grow.

High achievers immediately find themselves in leadership roles. "They not only get information, but they have to teach it or articulate it for others." Not only is that a powerful way to learn, Ms. Lim says, but "working with people is one of the most important skills in life. I don't think we should minimize that."

Individual teachers give specific examples of changes they see in students since detracking. A science teacher, noting that science test scores have gone up every year for the past four years, favors small group work that allows students to serve as role models for each other. "Good explaining — modeling of oral language — is very valuable to our kids on the low end. Pretty soon that starts translating into writing skills. They may not get the language the teacher is using, but they can see from their neighbor's work what they're supposed to do."

This teacher had a ready basis for comparison. "I taught a low-track math class last year, and I hated it," she said. "These same kids never acted out in science class. But in math, all kinds of behavior problems would come up. They felt crummy about themselves. You couldn't put them in cooperative groups because there weren't any leaders. There wasn't a wide range of problem-solving skills. Verbal skills were limited. After that experience, I'd never want to teach a tracked class again."

Even the head of the math department bemoaned "resistance to learning" in the low-achieving track. She noted peer pressures that result from the lack of positive role models. "It is not fashionable to be smart. In subtle ways, their friends are saying, 'don't do it, don't do it.'"

Higher achieving students may not resist learning, but an English teacher recounted how, in her experience, they too are poorly served by tracked situations. "You may think it's easier to teach when you have an entire GATE group. But what you have is impulsivity running rampant. I know, because I taught GATE for many years. They waste time in trial-and-error — they just plunge in because they're so excited and turned on and motivated. It's hard to keep them channeled in any way." Perhaps even more important, she says, GATE students may be socially isolated. "It's scary to think that these kids who may be our future leaders have been in an elitist setting and not been socialized." She also fears that this kind of separation may be helping to create "a permanent underclass."

Math: The Biggest Hurdle

The math department — Willard's last vestige of tracking — has two tracks: "grade level math" and "above grade level math." In addition, some seventh graders in grade level math get extra help from a math backup class. Math backup is taken in place of an elective if the student does not have reading backup; in place of science if he does. For those with very low skills (primarily special education students), the department offers one proficiency class that relies heavily on manipulatives. Finally, there is an algebra class for advanced students, composed primarily of eighth graders.

The principal feels strongly that the department should try detracking, but math teachers are themselves at odds. The heart of the matter seems to be that since math skill levels are more easily measured than skills in, say, literature, student differences are more apparent. With a wide range of abilities so clear, some teachers who otherwise favor heterogeneous grouping are inclined to think that math is an exception — the one subject where heterogeneity would work against student progress.

The department chair, Ms. C, favors detracking. One of her arguments is that those high achievers good at automatic production of answers will benefit from the greater problem-solving orientation of some lower achievers. At least one other teacher is adamantly opposed; the rest have a "wait and see" attitude. Frequent arguments arise over this issue at department meetings, with Ms. Lim often involved.

After several years of unsuccessful prodding, Ms. Lim is taking a "back door" approach to detracking math. For next year, she has put together a volunteer interdisciplinary team at the eighth grade level consisting of an English, history, science, and math teacher (Ms. C). The team will teach a common, heterogeneous group of students. To put such a group together, Ms. Lim has begun recruiting parents who want their children assigned to it. At the most recent parent night, 40 parents of predominantly higher achievers indicated interest — enough to balance two sections, says Ms. Lim, assuming that enough middle and low students are recruited. But even this plan to detrack on a trial basis has not met with the total approval of math teachers.

At a recent math department meeting, Ms. Lim flatly told balking teachers that despite their resistance, she and Ms. C have the right to try out an

approach they strongly believe in and that at least some parents clearly want for their kids.

Taking Nothing For Granted

While understandably proud of their achievements at Willard, teachers know that much of their success with these highly diverse students is due to the school's support structure. An important piece of that structure is the uniform discipline policy, developed over the last few years and posted in capsule form in every classroom. The policy tries to achieve a balance of incentives and negative consequences — a great improvement over Willard's former, strictly punitive system. The most active arbiters of discipline are the school's three "student supervisors" — currently three black adult males who describe themselves as having "a physically strong presence." The three are ever-present on campus, assuming roles that range from trusted confidante to confrontational judge. With the administration's full backing, they exercise the power to choose appropriate disciplinary action for a given student. It is not surprising that faculty have voted them as the most valuable staff members on campus.

Teachers are also grateful for the school's atypical amounts of money and manpower. They hold dear their special funding from grants and taxpayers and view their substantial group of adult tutors as essential for enabling small-group work and "catching kids up."

Even assuming that all these positive elements can be sustained, staff acknowledge a number of problems. Math department resistance to detracking is clearly one. Another is the lack of enough hours in the school day to offer back-up classes — so successful where they've been used — in all core academic subjects. Several teachers say that the need is particularly acute in social studies. Some faculty also worry about the very small group of students who are failing the school's academic curriculum. They wonder if it would be wise at this age to begin providing some non-academic alternatives.

But the biggest challenge may stem from the vicissitudes of the Board of Education. In its eight years as a detracked school, Willard has witnessed changes in board proclivities. Despite state level advocacy of heterogeneous grouping, Willard can never be certain that the board will continue to support — or even tolerate — Willard's commitment to it. Indeed, there have been several recent occasions when Willard staff and students have felt concerned enough about board leanings that they've attended meetings to testify to the benefits of their heterogeneous classes.

Just a few of the words and phrases Shakespeare used:

suspicious	hurry	lonely
gloomy	bump	eventful
critic	fitful	disgraceful
dwindle	fretful	countless
exposure	courtship	inauspicious
recall	assassination	dishearten
misplace	monumental	bare-faced
impartial	distrustful	denote
catching a cold	fair play	pomp and circumstance
elbow-room	mind's eye	the King's English

THINGS STUDENTS SHOULD KNOW ABOUT THE PLAY

1. Who were the main characters on each side of the feud?
2. The Prince's edict.
3. Juliet's relationship with her family, her nurse, and the friar.
4. Romeo's determination to "be in love," and his haste to act.
5. Friar Lawrence's plan to unite the two feuding families.
6. The reasons for and results of Mercutio and Tybalt's deaths.
7. The disaster of timing.
8. The reconciliation of the families as a result of the lover's deaths.
9. Responsibility for tragedy is shared by those involved.

STUDENTS WHO READ TWO YEARS OR MORE BELOW GRADE LEVEL

- should begin the study of the play a week earlier in the reading support class
- should use the maps they develop in the reading support class to help them in English classroom discussions
- should be expected to know core concepts, major characters and the sequence of events
- should be expected to participate in class discussions
- should do all the writings expected of the class to the best of their ability

Vocabulary for *Romeo and Juliet*

Theatrical	Useful	
play	civil	garrulous
act	strife	conjure
scene	fray	by rote
enter	star-crossed	rancor
exit	pernicious	gross
exuent	portentous	feign
folio	humor	moderately
prologue	paradox	holy shrine
	impute	

Questions using useful vocabulary words for whole class discussion and possible writing at the end of the unit

1. In what way did **civil** blood make **civil** hands unclean?
2. Because of the **strife** in *Romeo and Juliet* "All are punished." Explain.
3. Why is the families' **rancor pernicious**?
4. In what way can foreshadowing be **portentous**? Give an example from *Romeo and Juliet*.
5. What different meanings of **humor** can you apply to a discussion of *Romeo and Juliet*?
6. What **humor** is Romeo? Tybalt? Mercutio?
7. What reasons do you see in Shakespeare's use of the **paradoxes** in Act I Scene I lines 176-185?
8. What do you find out from the nurse's **garrulous** chatter?
9. What kind of motives do you **impute** to Tybalt?
10. Was Romeo's love **by rote** for Rosalind, as the friar states? Is Romeo's love for Juliet **by rote**?
11. What is **gross** about the **strife** in *Romeo and Juliet?*
12. What reasons do you imagine the families will have for going out to **shrift** at the end of the play?
13. Is it medically possible for someone to **feign** death and not be discovered?
14. Why did the friar advise the lovers to approach their love **moderately**?

The Real World Here: McKinley Middle School (Redwood City)

McKinley Middle School is in a diverse, thriving community on the San Francisco peninsula. The main building, a classic, two-story schoolhouse, dates back to 1930. Flanking that are two separate and newer one-story wings. Approximately 730 seventh and eighth graders attend. Their homes range from luxury houses with Bay views to multi-family, one room apartments. Nearly half (49 percent) of the students are Hispanic, and most of the rest (45 percent) are white. The other six percent includes many different ethnic groups. About a third of the students are identified as Limited English Proficient (LEP), a proportion that increases each year. On statewide tests, the school has improved its relative ranking for the last three years in a row. McKinley has also been named a Middle Grades Partnership School.

Dates of Visit: May 21 and 23, 1990. Principal: Gary Prehn.

Step By Step

According to Principal Gary Prehn, McKinley's detracking progress over the last three years has come about because of "a superintendent with vision and an educated Board of Education." These leaders, he says, conducted their own study of ability grouping, then recommended its gradual disbanding. All this, he notes, occurred a couple of years **before** *Caught in the Middle* was published.

Faculty at McKinley largely favored the change, even though, Mr. Prehn notes, "we went a little backwards with the process." Because it originated with the board, teachers didn't have as much time as they would have liked to be involved and prepared. Several fought the change "tooth and nail," and the issue nudged a couple of them to retire. Still, Mr. Prehn reports, most teachers had come to recognize that the tracks created troubling kinds of segregation. "We were putting all the students with behavior problems together, and we weren't getting a socioeconomic or cultural mix of kids. We really needed some of those kids to be in classes with good role models."

The problem was exacerbated by the nature of the elementary schools feeding into McKinley: "We bring kids in from two schools that are probably 98 percent Hispanic, from another school that's 99.9 percent white, and from a couple that are fairly mixed. During their two years here, we want to get those kids together, understanding and appreciating each other. Being able to work together and not always be with the little clique you've been with for the last six years is important."

McKinley has core classes in seventh and eighth grade. In seventh grade, the three-period core encompasses language arts, literature, and social studies; in eighth grade, the two-period core covers language arts and literature. Before the transition to heterogeneous grouping began, core classes and math had been taught in the traditional three tracks: a lower "skills" track, a regular track, and an advanced "honors" track. During the first year of the transition, the school eliminated the honors level for eighth grade social studies. The next year brought a more dramatic step: elimination of the "skills" track in the seventh and eighth grade core. This year, the seventh grade "skills" math group was minimized, with half the students being placed in the regular track. This lays the groundwork for totally eliminating the "skills" math track next year at both grades, leaving each with regular and advanced math classes.

In essence, then, the school has nearly accomplished the disbanding of its lower "skills" track. Seventh and eighth grade science and eighth grade

social studies are totally heterogeneous. All but about 50 "honors" students contribute to the student mix in core classes.

Today, says Mr. Prehn, teachers who previously taught classes in the "skills" level track are the first to say, "It's a lot more work, but it's also better for kids." Throughout the school, teachers are seeing kids who were not succeeding in a "laned" setting doing well now that they are heterogeneously grouped. Still, the idea of dissolving the "honors" core and advanced math classes remains controversial among the staff; resolution doesn't appear close at hand.

Coping Instructionally

Despite general teacher enthusiasm, heterogeneous grouping is far from easy to implement. "Our biggest challenge is preparing teachers to cope with the difficulties of teaching such a wide range of kids," says Mr. Prehn. To meet this challenge, teachers report using a variety of techniques. While some of these bear personal flourishes, all revolve around a few common concepts:

Individualize. This, say teachers, is perhaps most important. Student assignments should have enough latitude to permit each student to work according to his or her own level and ability. One core teacher does very purposeful "overplanning" so that she always has several layers of assignments to give out. Her goal may be to get the whole class through her stage 1 assignments. But if she sees a group of students doing particularly well, she will move them along to stage 2. Another core teacher sometimes gives her higher ability students additional and more complex homework. If they are studying medieval times, for example, she might ask the advanced group to research and report on how medieval Europe contrasts with medieval Japan. She also noted that some situations, such as computer labs, lend themselves more naturally to tailored assignments.

Be sure all students experience success, no matter what their level. This concept is closely related to individualizing. One teacher tries to give assignments involving a breadth of projects (often with students working in groups) and allowing for different learning styles or drawing on a variety of skills such as oral presentation, writing, and art. This way, she says, "all kids have a chance to shine at something. Some will get A's for the first time, and it really raises their self-esteem." Several teachers reported that they grade student work largely on relative standards that give importance to individual effort and improvement. In one teacher's core classes, for example, student skills in reading comprehension and writing mechanics range from the second to the 13th grade level. Her approach to grading takes this range into account: "I won't give A's to kids who write with errors, but I also won't fail kids if they try."

The idea of dissolving the "honors" core and advanced math classes remains controversial among McKinley's staff.

Use cooperative learning. Nearly all teachers interviewed made some reference to using cooperative learning techniques. Twenty-seven of the school's 42 teachers learned the basics of these techniques at a district inservice workshop a couple of years ago, and continuing support is available from the district cooperative learning specialist who is housed at McKinley. At the least formal extreme, some teachers regularly seat students in clusters to set a norm of peer assistance. But more formal cooperative tasks also seem commonplace. One seventh grade core teacher uses cooperative techniques in a social studies unit on the Middle Ages: students do some of their work in groups, they're rewarded with "serf money," and the class keeps track of which group has acquired the most money. Another core teacher who has experimented with various cooperative learning configurations has come to favor an unusual one: she has students choose their own group members for about two-thirds of their cooperative tasks. This approach, she says, leads to more success and less frustration. "I see no reason why kids can't be inspired by those of their own level."

Keep class sizes small. McKinley teachers believe that relatively small classes make it easier to teach heterogeneous groups because they permit

individual attention. In the current teacher contract, teachers can teach a cap of 170 students per day in six periods plus an advisory. In practice, this works particularly well for core teachers, because in core the same students are counted over again for each period. One seventh grade core teacher has two sections of three-period core with a total of 45 students. This, she said, makes it possible to work with a very diverse group.

Make sure that content engages students of all levels. McKinley's teachers are committed to making instruction interesting and relevant. This comes across even when teachers employ traditional teaching techniques such as recitation and individualized seatwork.

A Story of Prejudice

This lesson illustrates selection of a topic that has a lot of relevance to all the students, an assignment designed to build on their personal experiences, and good participation across class make-up (primarily white and Hispanic).

On this Monday in eighth grade core, Ms. C is passing out photocopies of a story they will finish reading today. The story, "Protestants Cry Too," tells of a Catholic family's reaction to the news that their oldest son intends to marry a Protestant girl. The Catholic father is deeply prejudiced against Protestants. After his first meeting with the girl, he feels he has successfully "exposed her." He finds her unemotional; besides that, she is a Republican, the daughter of a bank worker, and a tennis player. The story ends poignantly, with the father realizing that the girl has great love for his son, which she openly expresses.

Ms. C begins the lesson by directing a well-paced reading of the conclusion. She starts the reading herself, then calls on students to read different paragraphs. The reading goes smoothly, with nearly all students concentrating. At pauses, Ms. C interjects questions to test students' comprehension and interpretation of the story. These questions increase in breadth and intensity once the reading is finished.

After several "summing up" questions, Ms. C invites students to relate what they've read to their own experiences: "Think about people of different religions, races, sexes. What things do all people have in common?" As students volunteer responses, Ms. C lists them on the chalkboard: feelings; human beings can be hurt; opinions; sports; compassion; thoughts; family; love. Ms. C commends the list, and then presses forward: "I want you to think about your prejudices. How many of you think you are prejudiced in some small way?" A sprinkling of hands goes up. "I would say that in some small way, everyone is prejudiced. Let me give you an example of my own."

Recently at a train station, she says, two men stood on either side of her, one white and one black. Initially, she felt nervous about the black man — for no other reason than prejudice. Her nervousness quickly disappeared once they struck up a conversation, and she felt ashamed for her moment of doubt. Ms. C then gives a definition of prejudice: "Prejudices are lies that you believe. For example, 'All blacks are dangerous.' These lies usually start with the word 'all.'" A couple of students then volunteer examples of groups that promote prejudice. One Hispanic boy cites the Ku Klux Klan. A girl mentions Skinheads.

Twenty minutes into the discussion, the class is still attentive and inquisitive. Ms. C hands out a folder to each student containing the writing assignments for the week. A cover sheet entitled "Experiences of Prejudice" lists six assignments:

Monday: #1 A personal experience with prejudice

Tuesday: #2 A classmate's experience with prejudice

Wednesday: #3 A student's [from another class] experience with prejudice

Thursday and Friday: #4, 5 and 6 Rewrites of #1, 2, and 3.

The teacher emphasizes that the second and third assignments will require interviewing others. She also states that all the work will be due on Friday. She then refers to the chalkboard, where she has put up two guides.

On the left is a guide for the first assignment:

A Personal Experience of Prejudice

Tell about a specific time when you experienced prejudice. Either

- you were prejudiced
  or
- someone was prejudiced toward you

Tell in detail what happened and how you felt about it.

Use quotes.

Tell your main point at the end.

On the right is a guide for all the week's assignments:

Experiences of Prejudice

Each experience should fill one page and:

1. Tell about the experience in enough detail that the people reading it feel like they were there themselves.

2. Include exact quotes of the people involved.

3. Make a point about prejudice (write it in parentheses at the end).

Ms. C goes over these directions. She then gives students the rest of the period to work on the first assignment. "If you finish it, you won't have any homework."

The "Honors" Hinderance

One issue that stirs strong feeling at McKinley is the possible elimination of "honors" core classes. Nearly all faculty favor the change. With just one honors class in each of the two grades, only a small group of students are being "siphoned off," some point out. Others believe the problems created by the classes outweigh their benefits. One problem is that at present, the honors classes are predominantly white. "Honors kids really are a separate group here at the school," said one core teacher. "They have a distorted experience because they only see white kids like themselves." Another problem is the detriment to non-honors students. "Students who are motivated in my regular classes feel it's a real stigma to be here and not in honors," said a core teacher (who in fact teaches an honors class and loves it). "They are always asking me, 'What are the honors kids doing?'"

Even though she would disband honors classes in favor of heterogeneous grouping, this same teacher is wary of the often-repeated rationale that honors students will serve as great role models. She points out that a group of predominantly white students is not likely to be looked up to by non-whites. Nor do the honors students carry the prestige of being the most popular kids.

Yet another core teacher explained that she supports a total move to heterogeneous grouping because she has now had the experience of seeing her lower students (in mixed classes) doing challenging work by mid-year. "I have taught gifted classes in the past, and I find I am able to try the same things with my regular kids. I pretend in my mind that they're all gifted."

The seeming unanimity among faculty for eliminating honors is not shared by other constituents. While the faculty had anticipated Board of Education approval to dissolve honors for the coming school year, the board instead voted to maintain the status quo. Because of divided board opinion about whether or not the school needs an honors program, reports Mr. Prehn, the board has appointed a committee to study GATE.

To McKinley staff, the board division reflects a similar lack of agreement among parents, with many of the wealthier, white parents exerting pressure to keep GATE. Some parents are very con-

cerned that their children get assigned to and stay in the honors program. One teacher explained that parents can get frustrated even with the current system because there usually are more children identified as "gifted" than there are spaces in the honors class. Teachers feel that often the parents who exert the most pressure prevail.

A small group of parents actively lobbies the board to maintain the honors program. "For some," said Mr. Prehn, "there's a fear of the unknown — fear of their kids being with Hispanics." Mr. Prehn believes that the parents' real issue is wanting their kids to feel challenged, and these parents need to be convinced that challenging all kids is what he and his staff are committed to do. They believe that through heterogeneously grouped classes, they can not only achieve that goal but do so in a way that helps prepare kids for their future in society. "This is the real world here, you know. It's not all white or all Hispanic or all black."

Good . . . Better . . . Best: Sequoia Middle School (Redding)

Sequoia Middle School is located in a middle class suburban area of Redding. Within the last five years the student population has doubled to the current 1,008 sixth, seventh and eighth graders. Lumbering, once the predominant industry, has declined in recent years. Most occupations are service or trades. Sequoia's student population is primarily Caucasian, with 7.5 percent Asian, one percent black, and less than one percent Hispanic. School performance on statewide assessment tests is average. Sequoia has been selected as a Middle Grades Partnership School and also received the California Distinguished School Award in 1990.

Dates of Visit: May 2-3, 1990. Principal: Ron Ramsey (Acting).

It Can Be Done Successfully

"It takes some work, but with teachers and parents behind it, the transition to academically heterogeneous grouping of students can be done successfully," commented Sequoia's acting principal Ron Ramsey. Having been Dean of Students at Sequoia for several years before becoming acting principal in October, he has seen the school shift from a heavily tracked schedule to the current one where few classes are organized around academic ability. "We've always had a good school," said Mr. Ramsey. "but we're better now than ever at making sure our instruction meets the needs of our students. Heterogeneous grouping has improved our test scores, students are busy and occupied when I walk into classrooms, it's a happy campus, and students are more self-confident." Mr. Ramsey believes that when people — teachers or students — feel they are the 'best,' they produce accordingly. "Our philosophy at Sequoia is that we're all a team: students, teachers, administrators, parents," he said. "We all feel good about what we're doing. That's why we're successful; that's why we're the best."

Former principal Jim Weaver, now superintendent of an adjoining K-8 district, recalled coming to Sequoia six years ago when most classes were tracked — largely, he found, because insistence on grouping math classes by ability created scheduling problems that worked against mixing ability levels in other classes.

During that first year he focused staff development on cooperative learning, which entailed rethinking class grouping. "It's hard to do cooperative learning if you don't have a range of student abilities," he says. "Actually, one teacher was really the impetus; he told me that he could do cooperative learning in science, but not in math because he had no 'top' students who would motivate the slower ones and act as role models."

Mr. Weaver began talking with the staff about creating more heterogeneous classes, especially in math. At first teachers were reluctant to make any changes. Said one, "I felt everything was fine the way it was." Ultimately, Mr. Weaver made an administrative decision, announcing that changes would be made. "Most of the staff believed that remedial classes weren't particularly effective, but many felt the regular classes were," he recalls. "That was the only time I implemented a program without buy-in from the staff. It was not an easy decision, but I felt it was the only way to avoid a lot of wavering back and forth and bickering. Even so, it was a big fight."

Mr. Weaver viewed the initial scheduling change as an experiment. Only one upper-level eighth grade algebra class was retained. The rest were rearranged to create more heterogeneity.

Numerous release days were provided for the math teachers. Mr. Weaver remembers his staff's attitude as, "Well, if this is what you're going to do, then okay." They agreed to try it for a year. At year's end, the staff and principal evaluated the program and determined that upper-level math classes were needed in three grades, rather than just eighth. These classes were scheduled for the following year and remain today.

Mr. Weaver attributes the success of the scheduling changes to the teachers. "Their willingness to go along with me was critical, especially in overcoming parental fears and concerns," he says. "We'd established a trustworthy reputation with the parents. Because they trusted us they too were willing to try something new, particularly once they understood that the program would be evaluated at the end of the trial period. After the first year, only a few parents were still concerned. It was amazing how quickly people grasped what we were trying to accomplish."

"What a difference detracking has made. I never sense resignation from the lower students any more."

— Sequoia teacher

"The only other issue for our parents was the GATE classes," recalls Mr. Ramsey. "We really wrestled with this one." GATE classes have been retained, but drastically modified. From the seventh and eighth grades only 80 students were admitted to the program. Classes are held in the mornings during zero hour before the regular schedule starts. In class, students work on major projects. For example, they are currently creating an entire city, complete with currency, jobs, and city officials. As the teacher explained, "Their city can be any way they want it. They can eliminate crime, disease, whatever. At the conclusion of the project, they will analyze their creation." The teacher knows that the zero hour class was designed as a response to parental desires to retain GATE: "Some days I question the validity of bringing these students together like this, but mostly I think it serves a need, allowing these kids to express themselves fully. They can be as 'nerdy' as they want to and it's okay." Meanwhile, the size of the sixth grade GATE program was reduced, and it now operates as a once weekly two-hour pull-out.

Parents are comfortable with the revised math and GATE schedules, Mr. Weaver says. "They really appreciate that we went out of our way to accommodate their wishes and integrate them with what we wanted to accomplish."

Other than sixth grade GATE, the entire pull-out program has been eliminated. The resource program has been consolidated and given far less space, thus forcing students and teachers to get out and around campus. Students are in regular classes, and the teacher and aide get out and work with a variety of teachers.

Support is Essential

Once the scheduling had been changed, staff development activities accelerated. In addition to signing his teachers up for workshops, Mr. Weaver made a point of having them observe in each other's classrooms as well as in other schools. A peer tutoring program was implemented and student study teams established. "I felt it was important to provide a lot of support and assistance so teachers wouldn't feel overwhelmed and alone," he said. He also structured the counselor's job differently, eliminating responsibility for testing, administration, and scheduling, and making sure her tasks were student-centered and proactive. "The counselor is a change agent," he said. "I told her to go out there and make this a better place for kids, to look for opportunities where she can have maximum impact with the maximum number of students. Students need assistance with things happening in their lives."

When he created the new schedule, he paid special attention to the specific strengths of each teacher, matching students and teachers who would work well together, even in the few upper-level math classes. "He approached each as a piece of a puzzle, each having differing abilities and strengths," says one teacher. "He put us where we would have the most impact, where we could make the school a better

place. With 40 different people, there are 40 different paths. If one piece is gone, then the puzzle is incomplete. We can't afford to leave anyone out."

Mr. Weaver also spent a lot of time in classrooms to positively reinforce teachers. He would hope to catch teachers doing something he wanted them to do. "Then I would comment on it and they would do it even more. Teachers are like everyone else — when supported, they grow." Teachers generally appreciated the principal's classroom involvement because, says one, "He would see what was working as we went through change. He knew which lessons from workshops were being utilized by which teachers, and he saw how students of different abilities worked together."

Role of Cooperative Learning

Many teachers emphasize the unique needs of middle school students. As one says, "It was really our mutual commitment to providing the best for these students that prompted me to give heterogeneous grouping a try." For the same reason staff explored cooperative learning.

No one is really sure which came first: cooperative learning or heterogeneous grouping. But most believe you can't have one without the other. "They go together," said one teacher. "I don't know how you could deal with a wide range of ability levels without cooperative learning. At the same time, you can't do cooperative learning in a homogeneous classroom. I tried cooperative learning my first year in this school in a homogeneous class. It didn't work at all because there were no role models."

Sequoia teachers employ a variety of teaching strategies, many prompted by the change in class structure. Ms. C, for example, always pairs her students, matching a high-achieving student with a low-achieving one. She distinguishes between achievement and ability and avoids pairing based on the latter: "The one with the highest ability is not always the highest achiever," she says. She encourages students to teach their partners, the class, and even their parents. She finds that having to teach others spurs even low achievers to greater heights: "They learn so much more when they have to teach others. It surprises even me."

Ms. C uses a variety of different techniques in her class, including discovery and inquiry methods as well as pushing students to hypothesize. She also assigns projects that require students to apply knowledge in order to achieve a particular end product; and she encourages them to brainstorm as a class. "I seldom use the text," she says, "but when I do, I use a scavenger hunt approach, which is really more of the 'discovery' method." However, she's not averse to using direct instruction when appropriate. "I wouldn't want to be restricted to one teaching technique," she concludes.

Sixth Grade Science

The following classroom description shows how Ms. C. combines various teaching strategies in her class of 34 students.

Students sit in pairs at 17 tables, all facing forward. Ms. C tells each pair to select someone to be "the recorder" and do the actual writing. She then reviews the steps they will take to complete a lab on the spectrum. One student is called up to read the lab sheet, which says: "When you go outside, one of you will be looking through the prism and one through the spectroscope. Do you think the spectrum you see today will be the same as the other people's spectrum?" Ms. C commends the student and has him sit down. After Ms. C repeats the question from the lab sheet, she calls on another student to read more: "Do you think the spectrum you see through the prism will be the same as the one you'll see through the spectroscope?" Ms. C commends this student, and then repeats the question.

The students are now told to work with their partners to review the two lab questions "so you're very clear about what you have to do when we go outside." After telling them that she will be calling one pair to come to the front of the room to review the lab questions, Ms. C gives them ten minutes to answer the questions. As students work together, Ms. C passes back graded papers from a previous assignment and periodically tells them how much time they have left.

At the conclusion of ten minutes, Ms. C compliments her students, noting that a lot had been examining their instruments and "had some really good questions about what you're going to be doing."

Ms. C calls on one pair to share their answers. One of the students says, "We think different people will see different things because of the way they conduct their experiment." "Very interesting answer," says Ms. C. She calls on another pair, and the spokesperson says, "We think the way you hold the prism will determine how the light is broken up and what you will see." Ms. C responds, "Very good," and calls on a third pair. "We think the way you position yourself in the light of the sun will determine what you see," says this student. Ms. C comments, "Interesting. You're saying basically the same thing everyone else is saying, but you also think where you are in relation to the sun's light will make a difference in what you see. Is there anyone who said, 'Yes, we will all see the same thing?"' No one raises a hand. Now she reviews what they learned yesterday about the electromagnetic spectrum. "Remember how I said that light is magic and we each got a spectroscope and you went out in the halls with your partner and had some fun looking at the white light coming through your spectroscope from the sun. You saw a spectrum inside your spectroscope. Let's pretend that you're at home looking through your spectroscope, and your little sister comes along."

She calls a student to the front of the room and asks him to role-play with her. "What are you doing?" Ms. C asks, playing the role of the little sister. "I'm looking at a spectrum," the student replies. "What's a spectrum?" asks Ms. C.

The student sits down and Ms. C explains to the students that she is going to call various pairs to the front of the room and they are to role-play this same situation, explaining to their "little sister" what they are doing, and what they expect to see.

The first pair comes up and Ms. C reminds them to bring all their materials, which she checks. She then positions the two students and points out where the light is coming from. One student takes her prism and holds it in front of the sun. "Good, good," responds Ms. C. "Now what are you doing?" she asks the other student. This one gets out the paper, puts it on her book, and puts it down on the ground. "Great!" says Ms. C. "Now come on. Where is it that you need to be holding the prism?" She asks the student holding the instrument. "Of course, you have to have it where the light shines onto the paper. How else can you draw what you see?" The student adjusts her positioning so the light hits the paper on the floor.

After going through this exercise four times with different pairs of students, Ms. C instructs the students to get ready to go outside. She has them get their materials and line up at the door, checking each student to make sure they have all necessary supplies before leading them out to the athletic field.

Students immediately disperse over the field and begin holding prisms and spectroscopes up to the light. The wind is blowing and some students have trouble keeping their papers stationary on the ground. Ms. C goes from group to group. Stopping at one pair, she takes the students' prism and repositions it, then calls out to the rest of the class: "Hey you guys! We've got a great one over here. Come over here and see it." She hands the prism back to the student as several others come to look. Ms. C continues to monitor the activity, making similar announcements as she discovers something worth noting. For example, at one point she calls out, "This pair got six colors over here!" The students work for approximately 15 minutes before Ms. C takes the class inside.

When students are seated Ms. C tells says "talk to your neighbors," which they do quite loudly. After two minutes, she turns off the lights to get their attention and tells them, "When I turn the lights back on, face the front quietly and I'll ask you to tell us the order of the colors in your spectrum. I want you to share what you saw, not what you think you were supposed to see." She calls on four different students who share their observations. She writes the responses on the board, then shows an overhead transparency of the electromagnetic spectrum, taken from *Critical Thinking Skills Transparencies* (Prentice Hall). "Okay guys," she says, "I want you to turn your paper over and copy what you see up here. I want you to draw the spectrum that scientists say we should see when we break up light into its different parts. I'd like you to make a little chart, just like this one up here, then write in the colors as they are supposed to come in the spectrum. Red will come first, then orange, yellow, green, blue, indigo, and violet."

Ms. C monitors students' progress. As they finish, she says, "Okay now, I'm going to ask you a real brain-teasing question. Why do you think I put a circle around indigo?" she asks, pointing to the overhead transparency where she has indeed circled the word "indigo." One student says that she did not see indigo in her spectrum. "That's exactly right," replies Ms. C. "No one here has mentioned seeing indigo. And do you know what? I have never seen indigo. What did I tell you yesterday about the number six and number seven spectrum?" "That most scientists only list six colors in the spectrum," responds one student. "So which one do you think some scientists leave out of the spectrum?" the teacher continues. "Indigo," responds the whole class.

Now Ms. C asks if anyone knows what color indigo is. One student describes it as "a real deep, coarse purple." Ms. C commends the student and directs class attention to their books, asking what color is missing in the spectrum shown in the text. It's indigo again. Ms. C runs through the six colors shown in the textbook: "Okay, we have red at one end, and violet at the other end. Now remember all the different kinds of light energy we talked about when we first learned about light? How many have heard about ultra-violet light?" Almost every hand goes up. "Ultra-violet light does what to your skin?" the teacher asks. "It sunburns you," says one student. "Right," Ms. C responds. "Ultra-violet means on the other side of violet."

Pointing to the overhead, she continues. "We cannot see ultra-violet because it is past the violet end of the spectrum. Now, infra-red. Remember how we talked about infra-red rays? Infra-red means less than red. It is on the other side of the spectrum for red, which is the first color that we can see. So infra-red rays go over here where we can't see them." She points off the left end of the chart. "Now I want you to look up here. I expect you to remember this for the test. If we go from red to violet what happens to the wave-length? What is the distance between the cracks in the wave-length?" It decreases, says a student. "Yes," replies Ms. C, "It decreases! It gets smaller. So violet has smaller, more squished-together waves. You can see right here that the wave-lengths are much smaller. What happens to the energy of the photons when we go from red to violet?" "It increases," responds another student. "Right," says the teacher. "It increases. So violet light has a lot more energy than red light."

The students are silent. Ms. C pauses for approximately 30 seconds, then tells them to "write these facts down. I want you to draw an arrow that says decreasing wave-length and another that says increasing photon energy." As students follow the transparency to draw their arrows, Ms. C monitors. Now she notes that it is time to clean up. As the bell rings, the students remain seated in their chairs until dismissed by Ms. C.

Social Skills Development is Necessary

Sequoia teachers believe that improving students' social skills is essential to improving academic achievement. One teacher said she takes the "Belly-Button-Out" approach with her students: "You start with the basics, learning about yourself first, then moving out to include others." Regardless of the strategy used to nurture them, social skills and trust are critical in creating an environment where students can work together harmoniously toward common goals. One teacher points out, "If you're going to mix a wide variety of students together, you've got to establish a climate of cooperation and responsibility. That means teaching them how to do it." Another teacher describes his classes over time: "At the beginning of the year, I have a lot of 'individuals' in my classes. By the end of the year they're cohesive, working together. That doesn't happen without a lot of social skill-building." And that always comes back to the teacher. Explains one, "I always create a comfort level in the classroom. The students have to learn to trust me, then they'll believe me; then they can trust and believe one another."

It Takes Patience

All this hard work is paying off. Talking to teachers, you'd think classes had been heterogeneous for much longer than four years. They cite improved test scores, greater student motivation, and a willingness among students to work with one another. "Students wouldn't have it any other way now," says one teacher. "They are disappointed when they can't work with their group or their partner." Another says he has observed a lot more care and consideration among students for their peers : "It's almost like the students have learned that today's world necessitates helping one another, waiting for each other." Cooperation has resulted in better work, adds a colleague. "Students really are more creative and prolific when they exchange ideas with one another and work together."

Although a few students periodically complain about wanting to work alone, these same students have also learned how to include others, to slow down, and to accept the fact that finished products may not look the way they were first envisioned. "Students really have to be complimented for their remarkable ability to adjust," says one teacher. "For some it has been really hard, especially the older ones who had always been in tracked groups before."

Teachers have seen student growth at all levels. "I have seen remarkable growth in the RSP and Chapter 1 students," says a core teacher, adding that "the top-end students are not limited either; they can push anything to its limits. For example, I have two GATE students in one class that I call the 'pendragons' because they had turned in 28 projects by the end of the semester."

Another teacher recalls that under the old system, "I used to have kids come up to me all the time and say things like, 'I'm in the low classes.' They felt bad about themselves and looked for help. I cannot emphasize enough what a difference detracking has made. I never sense resignation from the lower students any more." However, he does occasionally hear some sixth grader GATE students, bragging about being "the top." "They have an 'elite' attitude problem," he says. "Other kids hear them and are aware that some students still get special treatment." He believes that all students should be mixed together without any labels and would like to see the GATE distinction eliminated. This remains a controversial issue, especially for some parents, and is not likely to be resolved in the near future.

Recent turnover in Sequoia's administrative personnel and uncertainty about who will be the new principal have necessitated a "time out" period. A lot of changes have occurred over the past four years, and teachers continue to adjust their teaching styles to accommodate them. In the process they've only gotten better. Asked what he felt needed to be accomplished next at Sequoia, Mr. Weaver says it depends on the new principal. But he expresses confidence that whichever direction a new principal might choose, the staff would be cooperative.

A sign at the front of a classroom says it most clearly:

> "Good . . . Better . . . Best,
> Don't let it rest
> Until the good is better
> and the better is best!"

More Than Just Making a Decision: Talbert Middle School (Fountain Valley)

Talbert Middle School is located in Fountain Valley, a bedroom community in Orange County. Currently, the school serves 336 sixth, seventh and eighth graders in a district with an open enrollment policy. District enrollment is just now leveling off after a several-year decline: today there are 5,850 in 11 schools, compared with 11,600 in 19 schools in 1973. Fountain Valley is considered "built out"; there is virtually no room for growth. Property values in Talbert's enrollment area range from extremely high to low. Numerous students come from single-parent families at the low end. Talbert's achievement levels are diverse, but have been improving steadily over the last six years. Approximately 77 percent of the student population is Caucasian, 10 percent Asian, and the remaining 13 percent Hispanic and black. Teachers teach a full seven periods each day, many in teams of two or four.

Dates of Visit: March 1-2, 1990. Principal: Marc Ecker.

Heterogeneously Grouped Except in Math

Talbert Middle School has been heterogeneously grouped for the last two years except for some of its math classes. "Math is the hardest subject area to schedule students into without considering their ability levels," says Assistant Principal Paul Klempner. "We also feed into a high school that tracks the students, so we feel we need to prepare them for that experience."

In eighth grade, students are placed into one of four math levels. Advanced algebra (one class), for top achievers, is a fast-pace course where students work toward taking a final test to qualify for advanced high school math classes. Basic algebra (one class), for students just below the advanced group, is a solid, evenly-paced algebra class where the goal is for every student to be successful. Pre-algebra (one class) is for students who will eventually move through the algebra and geometry track. Finally, general math (three classes) is for the rest of the eighth grade students. Students in the upper math classes are heterogeneously grouped for their other classes.

Seventh grade has two non-heterogeneous math classes, both pre-algebra. The top 70 math students are placed here. "These students can then be directed into the best math placement in the eighth grade, based upon their readiness, their performance, and their determination," says Mr. Klempner. The seventh grade math teacher makes these recommendations.

Sixth grade students are assigned to four-teacher teams (except for one group of students assigned to a pair of teachers). They receive math instruction as part of their team coursework. The students are with these instructors for most of the day, going out only for PE and exploratory. "Essentially, content is the same for all levels, regardless of subject," says one teacher. "But of course, some students will excel and we try to give them additional work that challenges them."

The Switch from Tracking: Slow and Laborious

Paul Klempner believes that the school has come a long way from its once heavily tracked program, "but it has been a fairly slow, laborious process." Seven years ago when Talbert was a K-8

elementary school, the district began feeling the effects of declining enrollment. To deal with this, Talbert's then principal initiated the change to a 6-8 middle school. For its first three years, Talbert Middle School was tracked: students traveled from class to class with the same group throughout the day.

Four years ago, a new principal was hired. Thoroughly rooted in elementary and middle school philosophy, he began making some changes. For one, he started core classes in the sixth grade so as to limit the number of teachers students had and promote the idea of a "school within a school." To further ease the transition from the elementary "one-teacher-all-day" model to middle school, sixth grade teachers were assigned to a teacher partner. Each partnership was then paired with another, making a total of four teachers responsible for a block of students all day (except for PE and exploratory). "The principal wanted teachers to have a 'buddy,'" says Mr. Klempner. "He hoped that a strong relationship would develop between the partners, then extend out to the larger team of four. So far, it seems to be working quite well."

The principal next sent several teachers to a workshop on the state frameworks, and they came back with information to share with their colleagues. "However, this didn't address how we were to go about detracking. All it emphasized was the need to be concerned about our tracking."

When *Caught in the Middle* was published, spelling out its child-centered philosophy of middle schools, the need for detracking became very apparent to the staff. Interest in heterogeneous grouping ran high. At that time even Talbert's sixth grade core classes were often ability grouped, "simply because of the way we did our scheduling," says Mr. Klempner. We recognized that we needed to begin addressing this issue seriously."

The next step was to break up the time schedules of the "higher achievement" classes. Several such classes, especially in math, were scheduled at the same time. The result was that at all levels, groups of 60 kids would go through their schedules "in lockstep together," says one teacher. By staggering the higher achievement classes, all levels could be scheduled in a way that avoided tracking. But this required a dramatic shift in the way the master schedule was built as well as some trial and error. Though today only tracked in math, "we're still trying to limit the driving effect that math scheduling can have on the rest of the schedule," says the teacher.

To make the changes palatable to parents, Talbert did a fact-finding survey, held meetings, and extended invitations for parents to come visit classes. "This seemed to alleviate a lot of initial concerns," says Mr. Klempner. Most such concerns focused on math. "This is why we have gone slower with math classes and why we are still ability-level grouped in math."

Throughout the process, one of the greatest benefits to teachers has been administrative support for attending workshops and conferences and visiting other schools. Several teachers say they would like to do much more. Says one: "I love to get out and visit other schools and teachers. Sometimes the smallest thing I see can give me an idea that develops into something big and useful."

New Principal Ensures Continuity

Marc Ecker was hired as principal this year, bringing a strong background in middle school reform. At his previous school he made the shift to heterogeneous grouping in 1984, and he strongly believes in supporting teachers with the resources they need to teach. "You have to 'enable' teachers to have them be most effective," he says. He has maintained the practice of getting teachers out to see what others are doing. He also provides many demonstration lessons on campus.

"When kids were ability-placed, they had no motivation to stretch themselves. They had no models to encourage them to stretch. We did such a disservice to students before we got smart and started mixing them together." When asked how he felt about the tracked math classes, Mr. Ecker expressed the need to provide opportunities for those who want to be ready for the most challenging high school math. "However," he stated, "we also need to allow others into these classes besides just the brightest and the best. There's no black and white to things. Somehow we need to be able to look at the grays and find ways to mix and match without losing any of the advantages. This is the part that challenges us as educators."

His dream is to eventually reorganize the school to have open classrooms with more inquiry-approach learning, more focus on process, and more connection with real-world experiences. In math, he would like to see no classes lower than pre-algebra, with all students by eighth grade able to complete that class successfully. He believes it can be done, "but it's going to take some hard work and a very strong commitment from all of us."

Adopting New Instructional Strategies

"Cooperative learning goes hand-in-hand with heterogeneous grouping," says Mr. Ecker. Mr. Klempner agrees and credits the teachers' skills in cooperative techniques as the major reason Talbert has been able to progress so far in detracking.

Teachers knew that once the school began mixing students, they would have to alter their teaching so as to address a range of needs. Early on, a group of teachers attended a workshop on cooperative learning. Over time, they've learned to use a variety of other strategies as well. "Some do 'collaborative learning,' where students work together collectively on projects," says Mr. Ecker. "Others do a lot of simulations and role-playing, and several have used some of the 'Interact' strategies developed in San Diego."

One eighth grade teacher reports that she adjusts assignments for differing abilities, modifies the amount of work for each, changes test questions, and uses "learning banks" where students individually target what they will learn and contract with the teacher to do so. She has also found paraphrasing from books to be very effective: "We read from the book, then restate what we have just read. We also do a lot of talking after the restating, so everyone understands what is meant, and then we write. We really are working on two major modes of learning this way — the talking/writing, and the reading/restating." Throughout all activities, she includes much cooperative grouping. "I've taught both the highs and the lows in my career, and it is so much easier for both sets of students to learn cooperatively. It's easier for me too, but also much more frustrating because some kids simply don't like cooperative learning. They want to work on their own, at their own pace. You really have to be willing to train them in a whole different approach, not only toward learning but toward life."

One sixth grade man/woman team (that team-teaches sixth grade students five periods per day and independently teach two periods in other grades) has found that cooperative learning groups are very successful when created by mixing organizational — rather than cognitive — abilities. "Many gifted students don't have the organizational skills to allow them to do their best," says one of the teachers. "The really organized students are not necessarily the brightest, though they're often 'A' students." If the brightest students can't "pull it together and organize it," she adds, they miss a lot. So they need to be taught organizational skills. Her partner agreed, noting that the range in student abilities doesn't appear so great when you think about them in this way.

"You have to be willing to train students in a whole different approach, not only toward learning but toward life."

— Talbert teacher

To help students be as organized as possible, these teachers work hard to be organized themselves. They put all student lessons, homework assignments, and grades on their computer each day — a practice that benefits parents as well as students. "All we have to do when a student is absent is pull the entire day's work off the printer and send it home." This teaching team also requires students to keep assignment calendars. And they've instituted a "study buddy" program that pairs an organized student with one who is less so. The organized buddy makes sure that the other gets the assignment sheet filled out correctly each day, that homework assistance is found if needed, and that work is ready to hand in when due. "We're always trying to find ways to help sixth graders study and do their work better," said one teacher. "The 'study buddy' program really makes a difference, especially for the 'C' student who can get grades raised to B's or A's."

The partners also feel that they model well for the students. They started teaming together three years ago when principals changed and find that this has created a strong sense of "family" that students relate to in a positive way. "We really give two sides to almost every issue, and students also get to see the interaction between masculine and feminine. *Our* diversity makes it okay for differences to exist between them."

Although heterogeneous grouping is one of the most sensible teaching models this team has seen, they say what's usually missing is adequate adult assistance to take cooperative learning "to the max." Each semester they've requested and gotten a student teacher, and they also frequently use the resource aide. These two extra adults in the classroom make it possible for them to group students according to ability level for math instruction. (They try to form groups according to ability to handle abstraction. One partner teaches the lower group in a very concrete way, while the other teaches the same lesson to the higher group more abstractly. The higher group gets different, rather than additional work.)

Even more adult assistance is needed, emphasizes this team — and not just for academics. "We need a counselor, for example, to deal with abused children. We need someone to listen to personal problems and give advice about drugs, goal-setting, and the realities of life after school. We have such super kids that it's a shame we can't give them all the help they need."

They also emphasize the need to equip schools properly. Regardless of how students are grouped or what teaching strategies are used, they note, teachers can only do so much in a limited environment. "For example," said one, "we don't have any labs for science. We have no equipment. Nothing. I did a dissection unit for the eighth grade science class. I have no demonstration table, so I sat down on the floor in my dress and pumps and did it in the middle of the floor. Students stood on chairs and tables above me so they could see. We don't really have facilities here to accommodate a true middle school."

In the Classroom

On observation days, classroom situations that best demonstrated heterogeneous grouping at Talbert tended to be those where teachers were effectively using cooperative learning. The following two examples portray staff commitment to cooperative learning as a means to successful detracking. They show the relative ease with which all students can take part in classroom work.

Eighth Grade Social Studies: Constitutional Convention

Students enter the room and sit in their assigned groups of four. (There are nine such groups.) The teacher begins: "You are a delegate from your home state, and you have come to meet with other delegates to discuss six major issues: representation, slavery, western lands, the money system, states' rights, and choosing a chief executive." The issues are written on the board. The teacher mentions that it is very hot in the delegation room and throughout the city, and there is no air conditioning.

The teacher assigns each student to be a delegate from a particular state, then has them change tables to sit with fellow delegates from the same state. (Each table holds a large, hand-lettered card, bearing a state's name.) The students make the shift with a minimum of effort. "I'll give you some time to meet with the other delegates," the teacher says. "Keep your meeting in order," she reminds them as they begin discussion. On each table are quotations from the various delegates whose identities students are assuming. The teacher gives them 15 minutes to discuss and prepare themselves for the large group session to follow.

At the conclusion of the allotted time, the teacher requests attention from the students and assigns one to the front of the room to act as chair, reminding them of the importance of keeping order in their meeting.

The chair opens discussion from the delegates by pointing to "slavery" on the blackboard. "Let's begin with slavery," she says. "What is it that you want to see accomplished?" Hands go up, and the chair calls on a delegate. "Our group feels that smaller states should be allowed to have slaves, whereas larger states should not." Immediately, another delegate responds, "No one should be allowed to have slaves." Another says, "We should all be allowed to have slaves." A short discussion ensues, then the chair asks for a motion. The first motion is to allow smaller but not larger states to have slaves; it is defeated by vote. The second is to ban slavery in all states; it too is defeated by vote. At this point, the teacher steps in and informs the delegates that at the original delegation meeting no recommendation on slavery was passed for inclusion into the Constitution. She points out similarities between today's discussion and the original.

The chair continues to work through the various issues, finishing all but two when the teacher stops the class just prior to the bell. "We will complete this activity tomorrow," she says. "In the meantime, I want you to look back over your experience today and think about how this might really have been." Students are dismissed as the bell rings.

Eighth Grade Core

Thirty-two students are in two rooms separated by a partially open sliding door. There are two teachers, each of their desks situated so they can see both spaces simultaneously. These teachers frequently team teach all 32 students together. But on this particular day the students have been separated, and each teacher is teaching a separate activity. Students are seated at eight tables, four students per table.

One teacher begins by reminding students to settle down after their recent field trip to Catalina Island. Using assertive discipline techniques, the teacher writes two students' names on the board, which has the immediate effect of quieting the students. As the students give the teacher their attention, she says they will be doing a "quick-write" to get ready for the discussion to follow. She gives them instructions to independently write what they liked about the trip, then what they didn't like. "You will have four minutes," she says. Students immediately begin making lists, some dividing their papers in half, others just listing whatever comes to their minds with no attempt to categorize.

At the conclusion of the four minutes, the teacher stops the students and says, "Share at your tables now, your best and your worst. Come up with the 'best of the best' and the 'worst of the worst.' You will have two minutes to get a consensus at your table. Get ready. Now, go!"

Students share for five minutes. Then the teacher calls their attention to the front of the room. "I'm going to go around the tables now. You will need a spokesperson to share what your group determined as the best and the worst." She calls on each table and one student stands up to report on the group's decisions. One table, for example, felt the worst was the food and the cabins; the best was the night hike. Another group felt the worst was bathroom duty while the best was lab activities. When all groups have shared, the teacher throws out a question: "If you could have changed the trip, what would you have changed?" In a brainstorm format, students come up with ideas and the teacher puts them on the board. When they finish, the following items are listed: warmer water, better food, longer time on the trip, a day off following the trip, more sleep, no loss of points if you don't dive, McDonald's food for dinner, and more lab activities.

Students now talk in their groups about what they felt could have been handled differently about the trip, with the teacher

directing them to look at things that are realistic: "We want to make this trip the best trip ever for next year's students." The bell rings approximately two minutes later, and students are dismissed.

It Appears to Make a Positive Difference

When interviewed about working in groups with different ability levels, students were extremely positive. They like the exposure to many viewpoints and ideas and the chance to learn from helping others, which for some is a brand new experience. One says, "I give help sometimes, I get help sometimes, and I particularly like that we study for tests together." Another speaks of "the really fun activities we get to do as a group. It's so much better than just writing out answers to questions from page one to page six." One student tells of being selected as computer lab assistant: "Each six weeks we have three helpers who get to go around and work with students when they need help. I worked really hard so I could do this. It's a very important job because you can't help them without being able to work with them. You have to know your way around computers and know how to get along with people."

Several eighth grade students say they gained much from their leadership program. "We go out and help sixth and seventh graders in PE," says one. "I always learn a lot from this. I was surprised how much I had forgotten since I was in those classes." Another notes: "Some students have good leadership skills, which helps us get the task done; others have good ideas and can give good input. I really understand more when I work in a group of different students."

Students do mention some drawbacks of cooperative learning groups. It's easy to get distracted and end up talking to friends, they say. There can sometimes be a lot of waiting until everyone knows the answers. And everyone doesn't always pull his or her fair share of the work. On balance, however, they feel they come out ahead. One describes the experience this way: "I love being independent and working on my own. I get lots more work done. Sometimes, when we're grouped, I say to myself, 'Oh no! I won't get my work done.' But then I always get more ideas this way. I really do think I end up learning more."

COOPERATIVE LEARNING

CHAPTER 2

Cooperative Learning

IN the last chapter we addressed cooperative learning for its value in teaching heterogeneously grouped classes. This chapter focuses on its potential to enhance learning whether or not a school is detracked. Three of the four schools portrayed here are tracked, and their teachers are strong proponents of cooperative learning strategies.

Cooperative learning is the popular term encompassing most forms of peer-based instruction in which students work in groups. Well over two dozen cooperative learning approaches

have been articulated. Some, such as Learning Together by the brothers David and Roger Johnson, apply to all grade levels and subjects. Others target specific ages and subject matter — for example, Team Accelerated Instruction, developed by Robert Slavin and colleagues, for math instruction in grades 3-6.

The primary aim of cooperative learning is to promote collaborative, responsible, and facilitative behavior — in other words, to engender "truly cooperative behavior" among students. "The essential ingredient of cooperative behavior is the attempt of each cooperator [student within a group] to facilitate the task performance or goal attainment of his or her fellow cooperators," writes Slavin (1983). This almost always requires coordination and communication between cooperators, Slavin notes, but simply assigning students to work in groups does not assure cooperative behavior. Success depends on a number of factors, including the nature of the learning task, the incentives provided, and students' social skills.

Research has shown that cooperative, peer-based classroom activity can be superior to more traditional teacher recitation and student seatwork arrangements, both in terms of student learning and social skill development. This evidence doubtless helps explain why cooperative learning has received steadily increasing attention from school practitioners over the last 15 years. *Caught in the Middle*, for example, endorses the concept: "With the rapid growth of peer influence during early adolescence comes the potential for middle grade students to benefit from school practices which are organized around peer-based learning activities" (p. 27).

Caught in the Middle outlines three reasons why such activities can benefit student learning. First, when the classroom is organized in peer groups, students have more opportunities to actively participate in the learning process. Thus, the potential exists for increasing "time on task," especially for those students who typically withdraw from academic work. Second, students in peer groups are likely to receive more feedback. Learning is enhanced if peers explain their reasoning to one another as opposed to simply giving answers. Third, since peer interaction is in tune with adolescent preferences, group work can lead to more positive attitudes toward learning.

There are important potential social benefits as well. According to Cohen (1986), student groupwork is likely to promote positive intergroup relations if members of different racial, ethnic, or socioeconomic identities work together. Groupwork is also superior to individual work for teaching students to take control of their own learning, thereby socializing them for their future roles as adult decision-makers and citizens.

This chapter portrays schools where cooperative learning is a well-established instructional method, where staffs know that it means more than just putting students in groups, and where classroom conditions maximize chances of success. The cases illustrate how different faculties use cooperative learning to meet school needs as well as their own instructional purposes.

Contrasting the Cases

Table 2 contrasts the four cases both organizationally and instructionally, showing similarities as well as important distinctions among them. The following observations and questions aim to stimulate ideas that will help both fledgling and experienced practitioners reflect on their instructional practices:

Observation: In all four schools, a small group of two or three teachers initiated cooperative learning after becoming aware of it through their own professional development activities. Events at three of the schools, however, prompted the interest of other teachers (e.g., change in school philosophy at La Vina; focus on improving instructional strategies at Piedmont and Turlock).

- Do you think teachers are more motivated to implement cooperative learning when they see it as an attractive instructional alternative in its own right or when they see it as a means to accomplish other, more global objectives (e.g., bilingualism, heterogeneous grouping)? Why? In your school, what would strongly motivate teachers to employ cooperative learning?

Observation: In schools with heterogeneous grouping (for example, La Vina), cooperative learning almost always finds its way into teachers' instructional repertoire as an effective tool for dealing with heterogeneity. However, many schools that retain some tracked classes are also attracted to using cooperative learning.

- In classes grouped homogeneously, what problems might teachers encounter when employing cooperative learning? How might

Table 2: Comparison of Cooperative Learning Among the Four Schools

PIEDMONT	BENICIA	TURLOCK	LA VINA
Organizational Attributes			
Teacher-driven innovation with strong administrative and district support		Site-driven innovation in response to teacher goal-setting; strong district, county, and local university support	Site-driven innovation prompted by new principal; major school goal of bilingualism; strong district support
Small cadre of teachers inspires and acts as resource for others			No teachers with "expert" status; all trained simultaneously
Initial training from outside experts; some teachers not yet trained	All teachers have formal training from outside and inside sources	Initial training from outside experts; some teachers not yet trained	All teachers have formal training from outside experts
Continued formal and informal training available to teachers throughout school year			
Outside demand for expertise of cooperative learning cadre			
Instructional Attributes			
Backup classes in reading, math for lower achievers	Smaller class sizes and extended core periods		Use of core periods and sixth grade teacher teams
Support from adult and peer tutors, homework center		Support from peer tutors and study teams	
High level of teacher coordination and control over curriculum	Teachers "over plan" curriculum to accommodate higher achievers		Teachers create more flexible assignments
Conscious use of techniques to motivate and involve students, especially cooperative learning			

these differ according to the predominant achievement level of the class (high, middle, or low)?

Observation: In three of the schools, the initial advocates for cooperative learning disseminated their practitioner knowledge to colleagues and eventually achieved the status of "resident experts." Some of these same teachers came to be recognized as experts outside their schools as well, teaching classes and/or conducting workshops for other school staffs.

- What are the advantages and disadvantages of having designated "expert" teachers at the school site? Since some teachers will inevitably become stronger advocates for an innovation than others, how can a school maximize this naturally developed resource? What are the implications for a school of having one or more of its teachers regularly training teachers at other sites? What measures might be undertaken to ensure that this practice is perceived as positive and beneficial to the school?

- At the three schools with "resident experts," negative sentiments toward these teachers appear minimal. Contrast this with how "experts" in other innovations might be perceived (see, for example, the chapter on Interdisciplinary Instruction).

Observation: Despite attempts to train all faculty members at the four schools, a certain number resist regularly using cooperative learning or refuse even to try the techniques. While it's accepted that some faculty members will remain non-users, advocates feel it is important to continuously encourage these teachers to participate.

- What would be your expectation for teacher participation if cooperative learning were adopted at your school? Are there any advantages or disadvantages to having the entire staff subscribing to cooperative learning? How might you motivate less eager teachers? With turnover in staff, how could you ensure that teachers new to the school are trained? What are the implications of having continuous "on-line" resources available?

Observation: After becoming familiar with formal cooperative learning techniques and experimenting with them in their classrooms, teachers at all four schools feel comfortable developing their own cooperative methods. These methods generally blend various models. In some instances, they are unique to a teacher's own needs.

- Program quality is often measured by adherence to models. When teachers use bits and pieces from research-based models to develop their own, what new complexities are introduced in thinking about measurable success? In your school, would it be advantageous to define some common and measurable indicators of success for cooperative group work? If so, how might this goal-setting be accomplished?

Observation: Staffs at all four schools recognize and emphasize that cooperative learning is not an instructional panacea; they use it as one tool to achieve specific instructional goals. Most teachers report using it less than 50 percent of the time.

- What goals and tasks might be most appropriate for cooperative learning? Would they differ from classroom to classroom? Several teachers experimented with using a much expanded format, then pulled back. What might be an appropriate path of experimentation for teachers at your school? Why?

Observation: In cooperative learning literature, some models focus on social skills, while others also encompass academic skills. The latter models assume that academic goals cannot be achieved without a strong interpersonal foundation. In all four cases, experienced teachers said it was necessary to provide students with a rationale for cooperation and to train them in needed social skills. Teachers use a number of approaches to accomplish these goals, ranging from informal talk to more formally developed lessons. Several build evaluations of social skills into group accountability.

- What are the ramifications when teachers have to take time away from their curricula to teach the social skills of cooperative learning? In what ways does the critical role of social skills in cooperative learning directly affect the formal goals of the teacher and school? Which school constituents need to be included in this change process, and how best might the school include them?

Productive Social Energy: Piedmont Middle School (San Jose)

Piedmont Middle School is in a middle class suburban area of San Jose, flanked to the east by rolling hills. Approximately 970 sixth, seventh, and eighth graders attend, including Asians (37 percent), Caucasians (37 percent), Hispanics (18 percent), and blacks (eight percent). Some 120 students, primarily Asian, are identified as ESL. The great majority of classes are heterogeneously assigned. Exceptions are one "honors" language arts class at each grade level and advanced placement of top math students to higher grade level or high school classes. School performance on statewide assessments is above average (60th percentile) and has been steadily improving in recent years.

Dates of Visit: March 26 & 28, 1990. Principal: Patricia Stelwagon.

Teachers First

Cooperative learning is a common instructional approach at Piedmont Middle School, thanks to the interest and efforts of several teachers. When Principal Patricia Stelwagon assumed her position seven years ago, the faculty had identified "instructional strategies" as one of its highest priorities for expansion and improvement. Accordingly, Ms. Stelwagon supported teachers' inservice training in this area. Several teachers gravitated toward cooperative learning as an important addition to their repertoire of instructional techniques. These teachers have since formed a cooperative learning resource cadre that encourages and assists other faculty members.

Mr. J, a social studies teacher and the most experienced member of this cadre, has been very influential in drawing other teachers into the cooperative learning process. He attended his first cooperative learning workshop six years ago. The next year he and three other Piedmont teachers went to another workshop offered by a local educator. He's had outside training in specific cooperative techniques advocated by the Johnson brothers and Robert Slavin, and recently he and five other staff (including the assistant principal) were trained in a district workshop to be trainers in nine different cooperative techniques, including "jigsaw," "group investigation," "team writing using peer editing," and "readers' theater." As part of this training-of-trainers program, the six got release time during the school year for peer observation and coaching. Mr. J, meanwhile, also conducts cooperative learning workshops for teachers at other schools.

At Piedmont, teachers are encouraged and offered several methods to improve their cooperative teaching skills. A teacher may request that Mr. J observe a cooperative learning activity so he can generate solutions to a particular classroom problem. To free Mr. J, the assistant principal substitutes in his class. Ms. Stelwagon also models cooperative learning in individual classrooms. Finally, department and school-wide faculty meetings are often used as forums for discussing cooperative techniques. Meetings may offer presentations on topics such as how to build heterogeneous student groups or enhance students' group social skills. Meeting goals may be accomplished by grouping the teachers cooperatively (e.g., in jigsaw or "job alike" groups), or the agenda may include a report from members of the cooperative learning cadre on new or different things they are trying individually in their classrooms.

The principal and assistant principal estimate that approximately 50 to 60 percent of the teachers currently use cooperative learning on a regular basis. All math teachers use the approach to some degree. But cooperative learning is not promoted as an all-purpose instructional approach. "I do not believe in doing cooperative learning for its own sake," says Ms. Stelwagon. "It's a tool to use for

teaching a curriculum, but not always the best tool. It has to be used intelligently. The first question should be, 'What's the learning goal?'"

Among teachers, even cooperative learning's strongest advocates say it isn't Piedmont's dominant teaching approach. Asked how much time students spend in cooperative groups, teachers refer to their accountability system. Mr. J, for example, says that students' grades are based on four factors, each accounting for 25 percent: academic work carried out in cooperative groups; other in-class work; evaluation; and homework. "I tried using cooperative group work for 50 percent of the grades, but it didn't work," he said. "Kids became too dependent." One math teacher estimated that cooperative group grades would be at most 20 percent of a student's math grade, the rest based on individual assignments, quizzes, and tests.

No Single Model

Piedmont teachers, who are well versed in different cooperative learning techniques, unanimously agree that teachers must ultimately use a personalized approach. "The models are a nice crutch in the beginning," explains Mr. J, "but then you have to develop what works for you — and that can be a blend of different models." He, for example, ends up adapting his own materials: "I have looked at Slavin's United States history materials, and they don't really match what I have to cover. So I will take one of my activities and figure out how to teach it cooperatively."

The following three examples capture the variety of ways in which teachers apply cooperative learning at Piedmont.

Social Studies

At the beginning of the year, Mr. J sets up cooperative teams to last three to four weeks. Later in the year, teams stay intact for about six weeks. Mr. J selects the team members. In forming groups of four, he tries to mix high, middle, and low achievers while balancing for gender.

One of the first activities assigned to newly formed groups is designing a team logo. Mr. J emphasizes that team members cannot choose a name for themselves until they devote time specifically to finding out about one another. He says that this is one of the things about the groups that kids love the most.

In one of his 8th grade classes, individual student desks already are clustered in groups of four. Mr. J explains to his students that they will be doing a team activity based on their reading of a portion of *A Gathering of Days*, a novel about American life in the 1830s. He says that the assignment requires them to find specific examples in their reading. He tells students: "Each team will need to choose a recorder and a time monitor. You will need to write your team name on the directions sheet."

Once he signals that they begin, students rotate their desks so that two students face the other two. Mr. J hands out one sheet of directions to each team (see attachment). The directions ask students to write down at least one example to support each of nine statements (e.g., "Sayings were used as a means of teaching lessons"). Mr. J immediately begins to circulate among the groups. After several questions from students, he calls for class attention and gives them an example of an answer for the first statement. Then he resumes monitoring. When he sees a student working on other materials, he says, "You are supposed to be contributing to your group." When he observes appropriate behavior (e.g., attentive listening to other group members), he initials the teams' recording sheet. These initials later translate into extra points for grading the assignment.

Approximately 12 minutes into the activity, one team has finished its work. The teacher approves transition to an extension activity: designing a patchwork quilt. (At the other extreme, one group still is struggling with writing down an example for the second statement.) By the end of the

period, two other groups have also started the patchwork quilt.

When Mr. J grades the assignment later, every student receives the score from the group product. This, he notes, is one of the best ways to prevent having "hitchhikers" in the group. In rare cases where more than one student in a group resists contributing, Mr. J only gives the earned score to the group's working members.

Mathematics

Ms. P assigns her students to new cooperative learning groups every two weeks. She characterizes her assignment of four student to each group as "random and heterogeneous."

Ms. P is conducting a recitation on subtracting integers. She uses an overhead projector to write out the notation for a series of word problems. The problems are about "Sam the Postman" delivering or picking up positive amounts of money (e.g., "Sam brought a bill for $4 and took away a bill for $6").

With about 15 minutes left in the period, Ms. P starts a transition. Students already are seated in their groups of four. Ms. P announces that she will be handing out worksheets with eight of the statements she has been going over. Their job will be to write down the numeric equivalent of each verbal statement. She then hands out two sheets to each group. This reflects her routine of having students work primarily in pairs, although it is understood that the pairs also can choose to interact.

As soon as students receive their worksheets, discussions begin. Amid the low-level hum, all students appear task-oriented. Ms. P rotates among the groups constantly, responding to student questions. As the period draws to a close, she praises the class. "I was pleased with the amount of discussion going on. I like to hear arguing — it helps make sure you're getting the right answer. Now please bring me the papers."

After class, Ms. P explains that she will not be grading the papers. Instead, when the class next meets, she will hand papers back to the groups so they can identify which answers they disagree on and resolve those disagreements. She says she will put the correct number statements up on the chalkboard. From this, she will ask student groups to generate some "rules" that apply to subtracting integers.

Physical Education

Over the last decade, Ms. M has discovered that cooperative learning is "a real natural for P.E." At the start of each new sport (e.g., volleyball, basketball, track) she sets up groups of four students that are always balanced for gender (i.e., two males and two females). She then allows the groups to play together for a few days so that she can determine the relative levels of skills within each group. With this information, she designates a leader for each group. This leader is then responsible for seeing that all his or her group members learn the mechanics of the particular sport. Mechanics mastered, the group can graduate to team playing.

Ms. M finds it necessary to directly address students' social perceptions about sports. She sets the rule that "no put downs" are allowed. She notes that perceptions about gender differences are especially strong in sports, and she works hard to impart the idea that boys and girls are equally talented. Also, she says she sometimes has to deal with leaders who dread having an unathletic student in their groups. "These leaders get turned around though," she says. "They end up being proud that they've been able to teach someone."

Social Skills and Stamina

Piedmont teachers feel their cooperative groups run quite smoothly by this time of year. They emphasize that the dynamics are not as "natural" as they might appear. Both students and teachers first have to learn what to expect.

Accumulated wisdom at Piedmont suggests that student social skills are a vital first step to cooperative learning endeavors. The Piedmont cadre has developed a handout listing seven critical social skills that should be exhibited by students in their groups:

1. Eye Contact
2. Positive Comments (Manners)
3. Compliments
4. Listen to Others
5. Be Helpful (Assist Others)
6. Share Ideas and Materials
7. Take Turns

This handout is well-known and widely used, though according to Ms. Stelwagon, it took teachers three years to "buy into" the idea that these social skills are pivotal to the success of cooperative groups. Typically, a teacher will address the skills one lesson at a time at the beginning of the year. Thereafter, a teacher may call attention to a particular skill for a given cooperative activity (e.g., give extra points if the group is doing well at listening to each other). By slowly cementing these social behaviors, teachers are able to shift students' focus away from group dynamics and onto content.

One math teacher described in detail how she does this. "Especially with incoming sixth graders," she noted, "you don't expect cooperative groups to work during the first two months. Kids don't know how to talk to one another." Informally, she helps students along: "I will talk about consideration of other people and the importance of sharing. I also stress things like 'sharing your thinking.' I tell them that how you're thinking of a problem is often more important than the answer." Though it takes time away from her curriculum, this teacher also works on team building. "Otherwise, the teams would fall apart." Finally, she has found it helpful to refer students to her own set of rules about group work:

1. You are all responsible for your own behavior.
2. You are all responsible for your own learning.
3. You have to be willing to help anyone in your group who asks for help.
4. You all have to agree on the question before you call on me.

Experienced cooperative learning teachers at Piedmont also recognize that some of their colleagues may give up on the approach because they have unrealistic expectations for the ease of their own transition. Success, they say, requires certain things of teachers. "First, you need a tolerance for noise," explains one math teacher. "Second, you need to have enthusiasm because the kids won't buy into it unless you do. Third, you need a consistent classroom management program that works for both traditional and cooperative setups. Fourth, you have to come up with a good evaluation system to hold students accountable for what they do in groups. Finally, you need stamina!" Several teachers also mentioned how difficult it is to constantly, actively monitor the groups.

School Rationale; Impact on Students

Ms. Stelwagon gives several reasons why cooperative learning makes sense for Piedmont. "First, in today's world you need this technique for success in the work place. Second, cooperative learning is a good fit for this age group. The kids like each other — there is physical and social interaction and affection. And third, it gets diverse students working well together in heterogeneous groups." The assistant principal adds that for all its help with heterogeneity, the cooperative approach is also a boon in fairly homogeneous settings. In honors language arts and algebra, for example, the teacher uses it "as a way to get students to share their problem-solving processes — it's a metacognitive goal."

Teachers cite their own reasons for liking cooperative learning. Says Mr. J: "It puts kids' energies to good use. Also, kids like having someone to help them, to ask questions of." A math teacher notes, "Kids can be more specific about

their difficulties when working in a group — they can go beyond 'I don't get it.'"

After several years of observing the social and academic dynamics of many groups, some Piedmont teachers speak of seeing unanticipated student benefits. One math teacher, for example, finds that higher achievers learn how and why to help others succeed. Parents of top students often say that because their child is bright, he should have enriching activities, not waste his time helping others. "This type of comment says a lot about what's wrong with our society today," says the teacher.

Students often echo this attitude, asking, "Why do I need to share?" So the teacher explains her view that the cooperative learning experience will pay dividends in the world of work: "I tell them about being the boss. I ask them, 'How are you going to get others to do their work?' I want my top students to realize that they've got to get their groups to function." By contrast, this teacher reports that lower achievers orient very well to cooperative learning, particularly if the class is truly heterogeneous. "Peer pressure motivates them. They want the same kudos and attention from peers that everyone else gets."

Mr. J reports a mixed reaction from his higher achievers. After awhile though, "most of them generally like to help out. It improves their social status because the other students want to be on their teams and get help from them rather than make fun of them for being smart."

In general Piedmont students have become acclimated to cooperative learning, say the teachers. "The kids' expectations are different," says Mr. J. "They actually will ask you, 'Is this going to be an individual activity or a cooperative learning activity?'" Another teacher said that she can always tell which kids have had cooperative experience because right away they will say things in their groups like, "You've done a good job." She has also had students complain that they don't learn anything in traditional settings and much prefer the cooperative approach.

Persuading Reluctant Faculty

Administrators and key staff are proud that a large number of teachers are dedicated to cooperative learning and use it regularly. Though frustrated that some still resist, they accept that a few will never be won over. Meanwhile, they see that the school's climate of support for teacher sharing and collaboration is stirring mild enthusiasm in some of the reluctant teachers. Such support will be important for this middle group as each finds his or her way through the long and largely self-directed process of understanding cooperative learning and incorporating it into instructional practice.

PIEDMONT: ATTACHMENT
A GATHERING OF DAYS

Team Members

_____
_____
_____
_____

As a team, select examples from the pages you were assigned to read last night which will support the following statements. A minimum of one example per statement is required. If you can find more than one example, your team will receive extra points.

You will need a recorder for the team. You should also select a time monitor. The ending time for this activity will be posted on the board. I will be looking for evidence of listening skills. Remember, you are expected to be both mentally and physically focused on your team's effort.

1. Medicine, as practiced in the journal, was primitive by our standards.

2. Sayings were used as a means of teaching lessons.

3. Children entertained themselves differently in 1831 than they do today.

4. There are similarities in the way the 4th of July was celebrated in 1831 and the way we celebrate today.

5. The way people obtained food was different from the way we get our food today.

6. Farmers were as dependent on nature as they are today.

7. Children enjoyed hearing stories.

8. In order to survive, one had to know how to take care of one's family in an emergency.

9. The new Mrs. Hall (Daniel's mother) comes to be more accepted by Matty and Catherine.

Extension: Begin to design a patchwork quilt. Each team member should make a design on an 8" x 11" sheet of construction paper. Tape the sheets together. If other teams finish early, they may add their sections to yours.

It's All About Process: Benicia Middle School (Benicia)

Benicia Middle School is located just north of San Francisco in a small, quaint "village" at the end of a finger peninsula in the Bay. Set in a neighborhood of nice homes, the school is a series of box-like portable structures connected by outdoor cement walkways. The grounds are fenced with access through a front courtyard paralleling the main office area. Over 930 students are enrolled this year, with growth expected over the next several years. Most students come from households with above-average incomes, and most are Caucasian, though there is some ethnic diversity. Test scores generally reflect higher-than-average achievement. There are 49 teachers, two assistant principals, and three counselors.

Dates of Visit: May 14 & 15, 1990. Principal: Carole Hiltman.

We Have a Dream

"Our dream is to create an ideal environment academically, emotionally, physically, and socially for our students," says Assistant Principal Mark Stephenson. And to many of the school's teachers, one strategy that addresses all four of these areas well is cooperative learning.

Over several years, all Benicia teachers have had some training in cooperative learning. Some have taken outside workshops. And a number took advantage of inservice instruction provided by the district three years ago (eight sessions were offered, or about 18 hours). By now well over half the staff frequently use cooperative learning in one form or another. Teachers acknowledge that the shift has taken a long time. "This is a big change from the way we had been teaching," said one. Not all teachers use cooperative learning at the same level. "There are also those traditional teachers here who don't feel 'that style' is for them," notes Mr. Stephenson. "That's okay. There's a need for every style."

Nonetheless, Mr. Stephenson is a strong advocate of cooperative learning. He has an extensive background in the technique and in fact, teaches it at St. Mary's College. "I've always taught in a group mode," he says. "It's natural that I want others to experience the same successful and positive response that I get from kids. The more you get students interacting with one another, the better off you are in terms of their learning."

New Approaches for New Staff Members

Since Benicia is a growing school frequently hiring new staff members, Mr. Stephenson and several mentor teachers have started a teacher support group. Each new teacher is also assigned to a mentor teacher for support and assistance. Cooperative learning techniques are shared, and the mentors provide lots of opportunities for new teachers to try out new skills.

Such collegial support of the cooperative approach has taken Benicia a long way toward its goals for a strong student learning environment. "As I look at each department, there is much more integration and interaction than ever before," the assistant principal says. "Many teachers use simple cooperative learning techniques, such as the 'quick-write' where students write, then turn to their neighbor and share to magnify and clarify their ideas. Perhaps 40 percent do 'jigsaw' breakouts from time to time."

To Principal Carole Hiltman, hired last year, so much cooperative learning was "a real shock." She had been trained to use direct instruction and — as a principal — to evaluate direct instruction.

When she observed what Benicia teachers were doing in their classrooms, she simply didn't understand it. "I wasn't sure what to do, but I knew I needed to learn everything about cooperative learning as fast as I could."

With guidance from staff members, a lot of reading, and some workshop training, Ms. Hiltman buoyed up her skills. In light of her new insights, she reports being greatly impressed with what's happening at Benicia, particularly in such simulation projects as "Wagon Train Journey" where students cooperatively make decisions about their travel routes, work on a point system, and integrate a great deal of writing. But her biggest surprise has been the way cooperative learning has prompted a shift her in own focus: "I used to be interested in the final product as evidence of learning. Now I recognize that a good deal of the learning takes place in the process. So today I advocate that we work on the process and let the actual finished product take a back seat sometimes."

Demonstrating Process: Social Studies/English

Ms. J, an eighth grade social studies teacher, and Ms. K, an English teacher, have formed a team to practice what they advocate: working cooperatively. Ms. J has been in the school since 1980; Ms. K came more recently. "We found that our styles were compatible," says Ms. J. "We each have different strengths that we found worked well together. I guess you could say that we gelled. It's been a wonderful partnership." Each year the two plan together and create instructional units that utilize lots of cooperative learning strategies. Their most recent one is on the Civil War.

The goal of the Civil War project is to research and develop a news broadcast of an important Civil War event. Themes include slavery, Civil War South, famous people, abolitionists, events that led to war, Civil War North, and Abraham Lincoln. The two classes are combined, and the 50-some students break into self-selected groups of six or seven. "We'll often assign students to their groups, but this time we wanted to let them select their own," says Ms. J. Students are given a teacher-made packet of materials on the first day that outlines objectives, group responsibilities, the order of activities, and a listing of possible topics under each major theme (see attachment). Each student is to assume a role from those listed, including anchorperson, weatherperson, man-in-the-street, field reporter, and social commentator.

"We're interested in the process that occurs as students work together to create their broadcast," said Ms. J. "Cooperative learning teaches societal skills that need to be taught. We try to create a link between our students and the material they are learning. When we can do this, it makes them better citizens and better people, which is far more important than knowing every Civil War battle."

Day One: Towards the latter part of the period, Ms. J passes out the packets of information while Ms. K puts the following information on the board:

Slavery
- History of slavery in America
- Life of a slave
- Economic rationale - King Cotton
- Interview with a slave
- Northern opposition to slavery
- Did slavery destroy the black family?
- End of slavery - benefits/problems

As each topic is written on the board, the teachers take turns explaining it and offering possible resources. As they conclude the list, Ms. J gives each group another folder containing research material and data. Students are given six minutes to review their packets and determine their topics and student roles. Both teachers monitor the groups by walking around and talking to them.

The students are quiet while they look through their packets. They then become

noisy as they begin discussing what they want to do. Ms. K stops the discussions by flipping the lights off and on. She tells students they need to be sure to consider the cardinal rules of note taking: get the who, what, where, when, and why. Some parts of the assignment will be done independently, some parts as a group, she says. She also informs the students that a group of high school students will be coming next week to film each of the broadcasts. The packets are collected and students dismissed as the bell rings.

Day Two: The students sit in their groups as the teachers set up the television monitor and VCR. The teachers place the television in the center of the room and explain that they are going to show some newsclips to illustrate the various roles they expect students to assume. They comment on each clip, explaining the various roles and approaches: the *man-on the street* who is out where the action is, does the interviewing, and is seldom seen; the *anchorperson* who goes out to the field reporter sometimes, and alternates between being on-screen and off; the *theme-based approach* in which several stories focus on a single topic; the *formal interview*, which can be impromptu or structured; and the *investigative report*, which is an in-depth expose of a topic. They also point out the difference between national, state, and local news. Then they show an Andy Rooney clip to demonstrate *social commentary*. Students ask questions, and a fairly lengthy discussion follows. Ms. J concludes the discussion by stating, "You get a feel now for the way news gets done."

Students are then instructed to continue working in groups to get their information together. One student from each group comes to the front of the room to collect the packets and other resource materials that the teachers have laid out according to topics. Most groups begin creating a chart that lists students' names in one column, their roles in another, and their areas of study in another. The students work well together, and frequently assist one another. Most students are on-task and intent on their research, culling through their folder of resource materials. The teachers circulate throughout the classroom with additional resource books and materials, stopping at various groups. Five minutes prior to the bell, they stop the students, gather materials, and remind them that notes are due in draft form at the conclusion of tomorrow's period. Students are dismissed.

Day Three: Ms. J goes over additional information with the students regarding their broadcasts and puts the following on the board:

Broadcast Priorities

1. Access all information from the text
2. Cover all factual information notes
3. Add interesting/unusual details: 0 - 50 pts
4. Begin your script
5. Script is due EOP: 0 - 50 pts. Staple to notes.

She explains each item and emphasizes that at least one student in each group must use an actual quote. Students are told to get to work, and the teachers continue monitoring and acting as facilitators. Two students come to the front of the room, tape up butcher paper on the blackboard, then use the overhead projector to project a map of the states onto their paper. They use the projection to replicate several states as well.

The group members covering famous people discuss each participant's role and the information each has gathered so far. One student says he is doing his report on William Still, who ran the underground railroad. Another says she will be talking about Frederick Douglass because he did a lot for the women's movement: "I'm really big on this; it's my mission in life." Another indicates he will do a social commentary on General Grant: "He had a major flaw -

he drank!" Others are doing reports on Edward Everett and Generals Mead and Lee.

The group members take turns reading their draft scripts to one another. One student says he is having trouble completing his script. Others in his group give him help and suggestions. The student begins writing. Ms. K comes by and encourages him. She listens to him, then tells him he has a lot of good ideas. Ms. J stops at this group and talks to them about tying their broadcast together. "Your group is different anyway. All the other groups are tied together by a thematic structure. Yours is much looser. As anchor person, you could tie these together by using such things as the qualities that make people famous. You could introduce each, then couple them together — maybe even using a Johnny Carson format, where you have an assemblage of the famous people and bring them on, then interview them."

Students discuss the various ideas, then decide on their format. One student suggests that she could bring coasters from home depicting the Civil War. Another felt they needed to make some posters. Ms. K stops by with a poem by Douglass. Another student suggests that having program sponsors would be nice ("What do you need when you want a letter delivered? Send it Pony Express!"). One student offers to write two or three commercials and bring them, even suggesting using "Young Riders" as the background. One of the teachers comes by and offers butcher paper for visuals. She asks if they are getting their scripts done, reminding them the scripts are worth 50 points each. One student comments, "There should have been a category on major battles. I can't believe that wasn't a topic." Another adds, "Or Gettysburg. There should have been a group topic on that too."

Ms. K discusses the impromptu nature of news coverage with another group, using the recent earthquake as an example. "An earthquake happens instantly, on-the-spot. The news people were putting their broadcast together as it happened. That's part of the flavor and the joy of their work. It's one of the reasons for our pressure in here, our short timeline."

Fifteen minutes before the bell rings, Ms. K turns off the lights to get students' attention, then reminds them "to use six voices" in their broadcast. Students continue working in their groups, gathering their notes together, completing their scripts, and assigning tasks. The *famous people* group negotiates with the teacher to turn in notes in the morning and arranges to come in early to finish their work. Students return their materials, turn in their scripts and notes, and are dismissed.

Note: The teachers have allotted two additional two-period days to practice and ready the broadcasts prior to filming. They expect to see students in costumes, using props, etc. At the conclusion of the filming, they will show the finished segments to the entire group (both classes) for critiquing.

Student Comments: Students commented freely about working in cooperative groups, learning together, and about their teachers:

- "We do lots of working together. I like it. But we usually have only three or four to a group. I like that better."
- "I like small groups better, because in a large group it's too hard to satisfy everyone. I just don't work well in big groups. But I need to learn how, because I know that's what happens out in the business world, in real life."
- "I like working in groups because you get everyone's input. In these two classes, for the most part we all want to be here and want to learn.

We're not working to socialize like I've seen in some classes, but to turn out a quality project. That makes a big difference."

- "There actually shouldn't be any teachers, because when one peer understands it and explains it to others, they learn it so much better."

- "Our textbook is awful! The vocabulary is so complex and technical. It really helps when we can explain it to one another in plain English, in a way that makes sense."

- "Our teacher is a real person. She's not this entity that stands above us and tells us what to do. She lets us learn for ourselves. She understands us."

Teachers' Reflections: Both teachers expressed some trepidation about the broadcast project. "This is the first time we've done this," said one. "It took a long time to lay this out, and we have no idea how it will work. We'll see . . . it's scary!" But being nervous about the outcomes does not stop this pair from pushing on. "We have to try something in order to learn from it. If we don't make mistakes, then we can't make corrections and do a better job the next time around."

Both teachers were pleased with the groups students formed. Although the two classes have been combined for various projects throughout the year, the students have not been willing to mix together a lot. "I saw a lot of mixing for this project," said Ms. J. "My class is gifted; the other is heterogeneously grouped. My students have tended to stay together because they didn't want to give up that much control. I was pleased to see them mixing more. Maybe it's just because they feel more comfortable after having been together several times now."

The teachers designed this project as an end-of-the-year activity to create high interest. "Students need something that will kind of perk them up," said one. They also spent a lot of time planning and preparing the project before introducing it to students. "The biggest issue in good cooperative learning activities is the pre-thinking," said Ms. J. "We spend hours and hours getting something ready before we hand it out. For example, we spent a lot of time brainstorming ideas for the packets, then creating the materials that we put into them." The teachers also look for activities that will produce results beyond just the actual learning of information. For example, they are hoping to see students develop compassion for reporters and the work they do. They also want to see positive interdependence. Ms. J commented, "After we introduced the project, one of the students said he was going home to watch the news tonight. This is what we want to achieve. I don't think any of these students will watch the news again without being more astute about production and story-making."

The two teachers chafe at time constraints as they develop projects. "There just isn't enough time to spend getting things ready. And we have so much material to cover in class that sometimes it makes it hard to do these expanded projects. Working together takes time. There's a processing that needs to take place and you can't do it in a short time frame. We set tremendous goals for ourselves. Sometimes we may not meet the goal, but we're always pushing for it."

Both Ms. J and Ms. K emphasized the importance of training students about cooperative learning early in the year. "We teach them the rules, the objectives, the goals, etc." They then establish a class environment where each student works toward a shared learning experience. "We let them know that we're learners also and set up the class so we're all teachers; we learn from them all the time. We tell them,

'You are each others' most valuable resource.' They really take it to heart." The teachers also allow for different learning styles: "We don't do cooperative learning all the time," said Ms. J. "Students need to own their own things sometimes, so we provide for independent work. Sometimes kids crave time to work on their own. Sometimes we do partner work. If I had to determine how much time we spend on cooperative learning I would say it's about 60 percent."

The teachers also talk to the students about such things as what good teaching is, what helps learning, and Bloom's Taxonomy. "There are many ways to learn. We just happen to think that cooperative learning is one of the better techniques."

Ms. J and Ms. K have the students evaluate the class each trimester. "It's important to have students working at the top level of Bloom's Taxonomy," stated Ms. J. "Having the students evaluate the class gives them input into the learning process. It makes them feel important. It also makes the class more interesting. I think they learn more. It allows them to feel successful. They have a real experience of working together as a class, which is what I call 'confluent education' or caring for what you learn."

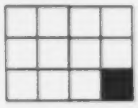
Demonstrating Process: Math

The bell rings and sixth-grade students take their assigned seats around seven rectangular tables, each seating four. Agenda folders are on each table; students take their agendas out. The teacher reviews the agenda with the students, then puts a transparency on the overhead projector. She draws the following:

"Let's pretend I have a candy bar," she states. "I divide it in half, giving Lisa half." She points to the colored section. "Mario says that's not fair. Lisa agrees and says she'll give Mario half of her half. If I write the problem, it will look like this:"

$$1/2 \times 1/2$$

She then reviews multiplication verbally with the students: two times four, four times eight, six times four, and six times six. "What happens?" she asks. "Is the answer getting larger or smaller?" The students respond in unison that it is getting larger. She then poses the question, "Why is my answer up here getting smaller?" She directs the students to discuss this question in their groups for one minute. Students do so, then respond. "You're not really multiplying; you're dividing," stated one. "When you do fractions, the larger the bottom number, the smaller the portion," said another. The teacher, delighted with the responses, does another example to make sure all students understand:



$1/3 \times 1/4 = 1/12$

And another:

$1/2 \times 3/4 = 3/8$

The teacher now talks about the distinction between numerators and denominators, using pizzas as an analogy. She passes out assignment sheets with similar problems as those on the board and instructs the students to use their group members as resources. She gives them 15 minutes, and most students use the full time.

The teacher asks the students to put their papers into their binders and "get ready" for a new activity. When she has their attention, she says, "I've got a game here." She passes out small rectangular shapes of paper with clues on them, three clues per group (from Project EQUALS). Each clue

challenges the students to design one geometric figure (e.g., "There are six sticks in the triangle. Make the figure!"). She has the students review their clues and ask about any vocabulary they may be unclear about. Most of the students appear to understand the words. The teacher then instructs them to use the toothpicks from their baskets (on each table is a basket of supplies, including toothpicks, markers, glue, scissors, etc.). She tells the students, "In the time left, you're going to build geometric figures." She puts several examples on the board, including the following:

how many sticks?

She defines the figures as geometric figures, and points to the first one, asking the students, "How many sticks were used?" She then says she will give treats to those groups that are able to build the shapes. Students immediately begin working on each of the clues. In some groups the students each take a clue and work independently. In others they work together on each clue. After eight minutes the bell rings, but students continue to work. The teacher moves to the doorway and passes out treats as students finish and leave the room. (Most students were finished after 10 minutes.) The teacher says she normally likes to talk about the problems with students after they finish, but because of time couldn't do it today.

The Future

With a new principal, two new assistant principals, and several new staff members, Benicia's staff is in a phase of learning to work together toward common goals. The cooperation promoted in classrooms is mirrored by staff and administration who have followed the principal's lead in adopting a "process school" philosophy. "Our staff is very pro-students and pro-middle school, using *Caught in the Middle* as our guide," says Ms. Hiltman. "The teachers here believe in change, but more importantly, they believe in processing change."

The school's recent Program Quality Review emphasized several areas for improvement, she reports. "The important one, I believe, was the need for better communication. I think we can achieve anything with good communication. We just have to remember that it is all about process. Our teachers want to be involved in what is happening, they want to do it themselves. They want to have enough time to do whatever they take on. The best administration can do is allow them that and provide the support they need."

Benicia's staff and administration are looking enthusiastically toward what they will tackle next — and their list is not small. For starters, they are talking about interdisciplinary instruction, team teaching, and advisory. "We've been laying the groundwork with cooperative learning," says Mr. Stephenson, who sees increased levels of teacher camaraderie and collaboration as the key to a continually improving student environment. "Our vision is really to do much more of what we now already have."

BROADCAST NEWS – CIVIL WAR

Goal: To research and develop a news broadcast of an important event or events involving the theme of the Civil War.

1. Work co-operatively in a group of five to six members.

2. When reporting on your topic, you will become the expert. Your news teams will be able to provide information about your topic (for example, Lincoln) while giving other details about the time and place such as a "man on the street" interview offering reactions to Lincoln's decision at Fort Sumter or Lincoln's death.

3. Requirement: A quote from a document that will be thematically developed during the broadcast. The quote will be used several times throughout the broadcast to support statements and opinions.

4. Requirement: Completed news script. This counts towards grades in English and history. Historical evidence and accuracy will be worth 150 points, while writing style and use of dialogue to develop theme will be worth 150 points in English.

5. Requirement: Complete a videotaped news broadcast for final grade evaluation! Every person must have a speaking part! Costumes or hats of some kind must be used! Written script must be completed before signing up for taping.

Minimum: One large visual, e.g., map or picture.

CONTINUED ASSIGNMENT: GROUP RESPONSIBILITIES

Make sure that every person in your group has a role.

Anchorperson #1: This person will make a statement about the major stories of your event. He will express his own opinions and those of the group about the significance of the story.

Anchorperson #2: This person will cover related news issues happening simultaneously. An example: War in the South group may discuss what women and children are doing while men are at war.

Weatherperson: This person would be giving a weather/climate forecast by checking what the weather is like at this time of year in the particular geographic area covered. A visual would be helpful to show the geography of the area. Explain that geography and how it might determine certain activities, e.g., Lee kept his troops to the West of the Allegheny Mountains because it was harder to detect his movements! (Extra Person)

Man in the Street: This person would be responsible for updated reporting of the event or events from the viewpoint of everyday people. Stage an interview with someone who may be affected by a decision but is not a famous person.

Field Reporter: This person would report from a particular location — Lincoln's home, for example, describing where he grew up as a child and what the area is like.

Field Reporter: This feature reporter would pick one particular issue to report on from the scene — an actual "slave revolt," for example, describing what happened, when, where, how, and why.

Social Commentor: This "60 minutes"-style reporter takes the time to analyze the effects of an event. Why is a particular person or event significant? What future effects might there be? Might things have been different? In developing your broadcast, you have "creative license" to change the format or follow traditional news reporting style.

One Thing Leads to Another: Turlock Junior High (Turlock)

Turlock Junior High School is in a modest neighborhood about 90 miles north of Fresno and 10 miles south of Modesto. The only middle grades school in the district, Turlock serves 1260 seventh and eighth graders, predominantly Caucasian. Enrollment in ESL classes fluctuates yearly, ranging from 45 to 200 students. Achievement test scores average in the middle to upper range. Although Turlock is predominantly an agricultural community, proximity to neighboring large cities and to U.C. Stanislaus makes access to services easy.

Dates of Visit: April 25-26 1990. Principal: Tom Hoy.

Training Is Important

A focus on cooperative learning began at Turlock five years ago after the district surveyed teachers to determine their areas of concern. "Many of Turlock's teachers identified instructional delivery methods as something they wanted to become more involved with," says Principal Tom Hoy. "Our major goal was, and continues to be, to improve instruction."

Two teachers had already been trained in cooperative learning and had been sharing their information with the rest of the staff. Meanwhile, Stanislaus County Office of Education had suggested a grassroots movement in cooperative learning. "We were ripe for it," said a Turlock teacher. The school brought in cooperative learning experts Johnson and Johnson to provide extensive inservice at the school, and many teachers were trained. Today the county office conducts an ongoing training program, not only at Turlock, but district-wide.

An agenda from the county office lists numerous sessions offered each quarter. One entitled "Cooperative Learning: TGIF (together in fun)" is offered early in the quarter. Another two-day session "for school teams already committed to implementing cooperative learning strategies" is scheduled the following month. Four consecutive sessions will focus on "TRIBES: A Process for Social Development and Cooperative Learning," and a one-semester unit course teaches the "Johnson/Johnson Model."

Such an agenda helps support Mr. Hoy's philosophy that "training equals success." Group work, he strongly believes, does not "cut it" unless teachers follow research-identified techniques that differentiate traditional grouping from true cooperative learning.

By now, over half of Turlock's staff has been formally trained in cooperative learning techniques. Two of the teachers, Ms. J and Mr. Q, are considered leaders. They conduct workshops both in-house and statewide. Mr. Hoy describes their abilities and commitment as "phenomenal" and readily gives other teachers release time to visit their classrooms. At Turlock one day last month, for example, the two led a support group meeting where teachers using the cooperative approach could share experiences and concerns, discuss ways to implement the new structure, get peer support, and see a demonstration of a cooperative technique known as PAIRS. The most recently trained teachers were especially urged to attend.

Mr. Hoy supports the teachers' efforts in every way he can. "This isn't something that can just be picked up in a minute," he notes. "It takes a lot of hard work. There are also a lot of risks that have to be taken, and that makes it doubly hard." His goal is to eliminate much of the extraneous "stuff" teachers have to deal with, such as paperwork and class interruptions. "I want to encourage my teachers to venture out. I'm willing to let them do as much as they can, see as much as possible, attend workshops, get county assistance, spend time with

our two 'experts,' and try strategies out in their classes. I try to clear the way so they can focus on what it is they want to achieve."

In the Classroom

Turlock teachers use a wide variety of cooperative learning strategies, including jigsaw, read-arounds, numbered heads, brainstorming, TRIBES, PAIRS, peer editing, pre-writes, paper checks, corners, metaphors, round table, desert survival, team study, and class meetings. "There are so many options," said one teacher. "I never feel like I'm confined or using something over and over again. Sometimes I even design my own approaches."

Turlock teachers are seeing higher student motivation, self-esteem, confidence, and competence.

Ways to form student groups vary as well. Groups may consist of four, three, or two students, and the configuration may change, depending on the activity. Teachers make the decision based on what they feel will best help them achieve their instructional goals. One teacher, who favors three-student groups explained, "I feel I get more participation this way. Four creates pairing off. Two is too social and doesn't allow as much flexibility in activities." Most teachers, however, use groups of four. Some keep the same groups for the entire year; others re-mix students each semester; and some simply change when they sense change is needed.

All agree with Ms. J that good cooperative structures create "built in" student accountability. For example, Ms. J says, jigsawing requires each student in a group to become an expert on a portion of the information. Each member must contribute his/her portion in order for the rest of the group to complete the project or activity. Most teachers use both group and individual grades.

These teachers believe it's best to establish classroom and group rules right at the beginning. For example, one teacher team has four simple rules for working in TRIBES: active listening, no put-downs, right-to-pass, and confidentiality. Several noted the importance of preparing students for the social aspect of cooperative learning. Others said it's critical to create a classroom environment that's supportive and comfortable. "A lot of students haven't been challenged in ordinary instruction to participate," said one. "They haven't been willing to take risks. When they start, they need to feel that it's safe."

Eighth Grade Social Studies

Students are seated in nine groups of three, reading the instructions on the blackboard:

1. Get folders.
2. Get one handout per group.
3. Student #1 read directions aloud.
4. Pass paper around to read statements and record group answers.
5. You have 10 minutes.

Students follow instructions and collect handouts from the front of the room about illegal and foreign farm workers (see attachment 1). The teacher says, "Raise your hands if you don't understand what to do." Each group begins reading. One student raises his hand, and the teacher asks his two other group members if they understand. Both nod yes, and the teacher tells them, "You explain it to your group member then." She tells the student who didn't understand to be sure to get the necessary information from his group.

In one group, student #1 (numbers were assigned when groups were formed) reads the instructions, then re- reads them when the other two are not clear what to do. When everyone understands the task, students take turns passing the paper around, each reading one statement aloud. Then the other two students decide if the statement opposes or supports using foreign/illegal workers. For example, one student

reads, "The price of farm products will stay low." The other two immediately respond, "Supportive." The reader then writes "S" next to that statement. In several instances, they stop and talk about the statement prior to determining whether it is supportive or not. When they complete all of the statements, they go back to determine who might have made such a statement. In the example above, the students decided that it was made by an illegal worker.

The teacher asks for attention at the front of the room and says, "Would all #2's stand up." The #2 students in each group stand. "Now I'm going to have you take turns. Simply pick one of the statements, tell us whether it was supportive or not and who might have said it." The students volunteer until all statements have been completed. As each student speaks, the teacher gives points to his or her group on a chart which she has on the overhead (each group is listed with space for points to be marked and tabulated; points are given for standing, for giving the answer, and for group attention). The teacher asks each respondent why his or her group answered the way they did. For example, the first student reads "'We need to feed our families.' This is supportive of using illegal workers, and was probably said by an illegal or foreign worker." The teacher asks, "Why?" and the student answers, "Because these people have families they need to feed and if we don't allow them to work, then their children will starve. This statement could also have been made by a farmer who needs work, but can't afford to work in the fields for the low wages that are being paid to the illegals and foreigners." The teacher commends the student and puts down three points for group #4.

When all statements have been completed, the teacher directs the students to open their atlases to page 13. "Every group can earn a point if they can find these three countries and have their fingers on them." She writes on the overhead: Guatemala, El Salvador, and Haiti. She monitors progress by walking around from group to group and checking where their fingers are. Groups 4, 7, 8, and 9 gain the extra point.

The teacher instructs students to keep their fingers on these three for a minute. She points to Guatemala and El Salvador and says, "What country are they near?" Several students reply, "Mexico." The teacher agrees. "So what these people from these countries do is come up to the United States through Mexico. This is no small trip, and they're illegal in Mexico too. The Haitians are on an island, so it's even harder. In the case of El Salvador and Guatemala, there are a lot of people coming in here. What I want you to do now is look up here for a minute at these slides and then you'll better understand why they want to come to the United States." (The slides were taken by the teacher on a trip.)

The first slide shows a very poorly dressed family, standing in front of several shacks, with large, contemporary high-rise buildings in the immediate background. "What you see is the contrast between the wealthy and the poor in some of these Central American countries. In the United States, we have poor and wealthy, but also a lot of people in the middle. In a lot of these countries, they don't have a middle class. Most of the people are workers on other people's land. They figure they'll go to the States where they can get an education, a job, and eventually get out of poverty. This picture shows how their houses are often made of cardboard, paper, or pieces of metal they find lying about."

The second slide is one of a very small, very shabby tin house. "This is the best house of the village," says the teacher. "There is no sanitation and no running water, so the level of disease is very high. A lot of people get hookworm."

The third slide is of a grassy area, and the teacher explains that this is where people go to do their washing. "Because there is no running water, people have to wash their clothes in some way. They come here to do that. All of the women come here. Because there is no sanitation, nowhere for the water to go, what do you think happens to it?" No hands go up, so the teacher continues. "It runs down the hillside and into the river. This is the water they drink, so you can imagine what the water is like after awhile."

The teacher shows additional slides, then asks the question, "Who do you think has the responsibility to make the rules, the laws, in this country?" A student responds, "Congress." The teacher agrees, and directs the students to start thinking about the kinds of laws that need to be passed to address the problems of the influx of all these people to the United States. She then passes out a page of instructions to each group (see attachment 2), reads the instructions aloud, then tells the students to begin discussing the issues. "Your group needs to deal with each of these issues, then come up with a plan to deal with each of the worker groups. It isn't going to be easy. Your plan must be fair to all involved. And remember, it must be realistic. You may have a plan that works, but isn't realistic. You've also got to be fair and recognize that all the groups are human beings. The bell is going to ring in five minutes, so I just want you to begin your discussion today. Perhaps jot down some key ideas on the bottoms or backs of your papers, and we will continue tomorrow." Students comply and begin talking in their groups about the first two or three issues on their handouts.

Many Advantages; Few Drawbacks

"One of the most important things we realized early on is that cooperative learning really moved the focus from teacher to student," said one teacher. Almost all her colleagues expressed the same sentiment. Said one: "Cooperative learning really is student centered. It makes me respect and value the importance of allowing students to process information." Another added: "I'm much more cognizant of students and what skills they need to learn. I don't see them as these empty heads waiting for me to put in information."

Most teachers also felt that students are now more sensitive to each other's needs. "After using cooperative learning in my classes for some time, I noticed that students became more observant of themselves and others. They were much more willing to work with others, especially students they normally didn't associate with. And they became protective of other students in their group, exhibiting a trust of one another and me that I hadn't experienced before." She cited an example where her class was doing an activity and two students were reluctant to join in. "The other students in the group pulled them in and encouraged them to participate. These students just needed a little nudging and an affirmation that they were wanted and included."

Another teacher added, "It not only brings students together, but teachers as well. Society has created greater and greater isolation, and we all need to learn how to respect one another in order to deal with today's problems. I think cooperative learning does that."

Heightened student motivation, even among good students, is one advantage cited by Ms. J. "It allows them the opportunity to explain information to others, which builds self-esteem, competence, and confidence. When they have to go through the steps first to get the information, then explain it to someone else, it strengthens their own learning. They go way beyond intuitive learning." Meanwhile, other students are helped. "I don't get it when you explain it," one student told her, "but when my neighbor tells me, I do."

For the most part, teachers are pleased with student accomplishments and achievements. They also like the student products being cooperatively produced. Said one teacher of an activity she and a colleague had students do the previous day, "We were just amazed at what they came up with. It was beyond our expectations."

Student comments showed them equally enthusiastic. Some examples: "My other classes are boring"; "In regular classes, I don't get to know

very many of the students at all"; "The recognition I get when I work in groups means more to me than any prizes or rewards"; "It's fun to work and learn and even take tests together sometimes"; "It's easier when I work with a group — we all have different study habits and I learn extra techniques"; "I never liked history before, but this year it doesn't seem as hard. It's fun."

Despite all this praise, Mr. Hoy does see some problems. "As with any learning modality, there will be abuses," he said. "Without proper planning and knowledge, it's easy for teachers to set up groups where the bulk of the work is shunted off to the smartest and the brightest." As an administrator, he also has had some difficulties with parents. "Many parents don't understand cooperative learning. They think their child is going to be held up intellectually, become bored, or get bogged down with doing everybody else's work. A big part of my job is training parents and helping them understand." On balance, however, he unquestionably agrees with the assessment of one of the teachers: "When you see what cooperative learning can do, it blows you away. When you realize its power, you just can't do anything else."

It Can Only Get Better

The assistant principal sees cooperative learning as the spark that's launching more extensive reforms at Turlock. "It's interesting how you start one thing here, and it leads to another over there and that leads to another," she said. "Since we started using cooperative learning, we're much more aware of how students think. We're concerned that they be active rather than passive learners, and we are paying attention to critical thinking skills."

Mr. Hoy agrees. He wants teachers to become involved in interdisciplinary instruction (IDI) next. He's willing to wait, however, until teachers request it. "I'll provide the modeling and ask for volunteers, but I'm not going to force it on anyone. I want teachers to come to me and ask for more. When you force people, it takes five years to recover." He sees IDI as a natural outgrowth of cooperative learning. "Actually, cooperative learning has promoted the start of peer coaching here. As there is more involvement in both cooperative learning and peer coaching, I see a natural expansion into interdisciplinary instruction and an enhancement of all three. It's hard to separate them when you really start looking at good teaching and meeting middle students' needs."

ATTCH 1
ILLEGAL AND FOREIGN FARM WORKERS

People have different points of view concerning the issue of illegal and foreign farm workers.

Read each statement below, discuss in your group, and decide whether it expresses support or opposition to the use of foreign or illegal workers.

Label the statement "S" for support or "O" for opposition.

Be prepared to explain why you made each choice!

1. "It is a basic human right to find work."
2. "We need to feed our families ."
3. "We were here first. We deserve the jobs."
4. "The price of farm products will stay low."
5. "We are trying to live better, like other Americans."
6. "American workers can't make a decent living on such low pay."
7. "There aren't enough American workers available to do the work."
8. "Profits of big farmers are rising. Let them pay more and have a smaller profit."
9. "We will work even for low wages. That is better than nothing."

Now go back and write after each statement who your group thinks would be most likely to say it (American migrant worker, farmer, foreign worker, etc.).

ATTCH 2
PROBLEM SOLVING: YOU HAVE THE POWER

Imagine you are a member of Congress whose job it is to find a solution to the migrant farm workers' problems of:

a) lower wages now than 25 years ago

b) competition with illegal aliens

c) HZA "temporary foreign worker" program

d) poor working conditions

Discuss in your group how to deal with each of these issues, and then come up with a realistic, fair, and humane plan. REMEMBER! Your plan must be fair to all the people involved: American migrant farmers, foreign workers, and farmers. (This won't be easy, but that's the way things are in politics.)

Write your plan here and on the back:

Good Things Come in Small Packages: La Vina Elementary School (Madera)

La Vina Elementary School is located approximately 30 miles north of Fresno and 10 miles southwest of Madera. The school is a series of one-story, boxlike structures, parallel to one another and connected with walkways. It is surrounded by acres of grapevines, alfalfa, and grazing cattle. Some 310 preschool through eighth grade students attend. About 90 percent are Hispanic with as many as 210 qualifying as LES (Limited English Speaking). Nine of the 11 teachers are certified for bilingual instruction. Each grade level has at least one bilingual teacher, and every classroom has a bilingual aide. Almost 90 percent of the parents are employed in agriculture, most of them seasonal farm laborers. About 65 percent of the students meet the criteria for participation in the Migrant Education program. La Vina also receives funding from Chapter 1, SIP, and the Emergency Immigrant Act. Students are considered "high risk," due to multiple alert factors including economic deprivation (most families earn $5,000-$10,000 a year), continued interruptions in schooling, limited English speaking skills, and limited formal education among parents. La Vina was selected as a California Distinguished School in 1987 and as a Middle Grades Partnership School in 1988. Many parents are actively involved in the school.

Date of Visit: April 4-5, 1990. Principal: Betty Scalise.

A Little 'Twist' With a Big Difference

La Vina has taken a very simple, but extraordinary, approach to instruction. It hasn't done what most schools with large Hispanic populations do, namely coalesce resources to maximize English instruction. Instead, it has adopted a philosophy whereby every student on campus, regardless of ethnic origin, will become proficient in two languages — their native one and either English or Spanish. This shift in approach has had far-reaching effects, apparent even to the unsuspecting visitor.

The first indication that something unusual happens here comes from two signs posted side-by-side at the entrance walkway. The first reads, "Welcome to Our School," the second, "Bienvenido a Nuestra Escuela." If you miss these signs, other clues about the school's philosophy abound. Almost all adults on campus are fluently bilingual. All printed materials sent home are produced in two languages, including homework assignments and the principal's newsletter. Inside the classrooms, teachers daily take an unusual approach to instruction — not only in language, but in the predominant teaching strategy used to assist student acquisition of a second language.

Once Upon A Time . . .

Four years ago, when Ms. Scalise was hired, most Caucasian students were transferring to schools with fewer migrant, Spanish-speaking students. "There was a lot of 'white flight,'" one teacher remembers. "Some parents didn't think their students would get a good education here." The bilingual Ms. Scalise (who learned Spanish in college and served as a Peace Corps volunteer in Colombia) introduced the two-language philosophy that has not only achieved the goal of stopping transfers out, but today has parents transferring their children into the school. It is now formally stated as part of the school's Mission Statement: "We are committed to the value of understanding, speaking, reading, and writing well in two languages. We believe that the ability to communicate in more than one language is of great importance in the multi-cultural, pluralistic world that our children will live and work in as adults."

The program has been carefully designed to promote fluency in two languages for all students. "A student who enters our school in kindergarten and stays should be bilingual by the fourth grade," says Ms. Scalise, making it clear that La Vina doesn't require that newcomers be kindergarteners. "We take students at any age."

Hispanic students find it natural and easy to work together because their heritage is one of cooperation.

Most of the staff (principal, teachers, aides, clerical) speak both languages fluently. Limited English speakers attend intensive ESL (English as a Second Language) classes. Those who speak Spanish but never learned to read or write it attend SSL (Spanish as a Second Language) and SSS (Spanish literacy skills) classes. Bilingual instructors offer a comprehensive curriculum in math, social studies, science, health, fine arts, physical education, reading, and language arts. "If you want students to learn another language, you have to model it and set up bilingualism as a desirable achievement," says Ms. Scalise. "Because of this shift in our focus, we aren't emphasizing one language to the detriment of another. We aren't giving all our attention to one population. We have the same expectation for all our students."

How Cooperative Learning Helps

After much trial and error, teachers have found that using cooperative learning groups in classes facilitates their bilingual approach. "It really makes sense, when you think about it," said one. "When you're doing what we're doing, it's smart to use all the resources you have to reach each and every student. You can teach your heart out, and still a student needs more than you can give. By using groups, you can make so much more available and accessible to the students." Another teacher agreed: "It is very important because it emphasizes peer tutoring. Students help one another in a way that I can't." One teacher noted that the discussion required by group work enhances bilingual instruction. "It allows students to hear what others have to say. Students need to hear language to learn it."

The staff at La Vina became aware of cooperative learning after two teachers attended a workshop in 1988. Their enthusiasm about what they'd learned led to several formal staff discussions about the technique's potential for the school. "Because of this interest and because we saw examples of cooperative learning in our Partnership visits, we decided to hold a training at our school," said Ms. Scalise. Last summer, teachers were given a stipend to go to a one-day cooperative learning workshop the Saturday before school started. All but two teachers attended, and most found it very worthwhile. "I don't think you can measure the value," was a typical comment. "It changed the way I teach. Now my role is secondary and the students are responsible for their learning themselves."

The principal was not surprised at this response. Her staff, she says, is congenial, compatible, and eager to try new things. "It was interesting to watch them in the staff room. I'd hear things like, 'Did you do it yet?' Each is very interested in what the others are doing. They couldn't wait to see what successes or failures were happening. Cooperative learning was on practically everyone's lips there for awhile. And as more and more teachers became 'fluent' in their use of it, others became more willing to try it."

To Ms. Scalise, the primary value of cooperative learning is "the way it combines students together in language, with no one left out." Cooperative groups, she says, also demand participation from everyone. Hispanic students find it quite natural and easy to work together because their heritage is one of cooperation. "Its a cultural thing. Their families work together all the time. They all pick into the same basket. Most of them know how to work together."

Teachers use cooperative learning in varying ways and for varying time frames. None advocated it as an exclusive strategy or even as a predominant teaching mode. "It won't work for every situation," noted one teacher. "You have to determine when it's appropriate and be very sure about what you want to accomplish." For example, a lot of basic instruction or basic information about a particular

concept cannot be given in a cooperatively-grouped structure. "This is a time when I need to be in control of the information because so much else will build on it," commented one of the instructors. Teachers also pointed out that the new mindset cooperative learning requires goes beyond changed roles for both teacher and students. You also need to be well organized, they said, and willing to let the students be noisier than usual.

The principal and teachers report that cooperative learning is now used from kindergarten through eighth grade. "Our reform has spread across all grade levels," said Ms. Scalise. "We're too small to be able to do something just within certain grades."

The following example illustrates how group work can engage students, regardless of their native language or the classroom's predominant language. It shows how one teacher's approach incorporates both the school philosophy and her recently acquired skills in cooperative learning.

Fifth Grade Math

Students enter the room and are seated in a 'U' with the teacher at the apex. The teacher informs them first in English, then in Spanish that they are going to be working in groups. She calls out each student's name and the aide takes a set of two flashcards to the student. One card is in English, the other in Spanish. They indicate the student's task in the group today. There are four tasks:

Lector	**Reader**
Apuntador	**Recorder**
Resolvedor	**Solver**
Reportero	**Reporter**

The cards are in different colors, so students know in which group they belong. They quickly rearrange their desks from the 'U' shape into six groups of four (one group has three). After the groups are formed, the teacher asks the recorders to come and pick up materials. Each recorder picks up instructions in English and in Spanish (see attachment), and 27 one-inch-square white cubes. The teacher says, "Everyone should begin working now. You need to work as a group. Be sure, reader, that you read everything on the paper." Some of the readers read the Spanish instruction sheet, others read the English one. Both the teacher and the aide move from group to group, stopping and providing input as necessary. The resource teacher enters the room and joins in, moving from group to group. The students arrange and rearrange the cubes, counting as they do, to determine the answers to 14 questions. One group has put their cubes together in two rows of 12 each and one row with three. The aide stops and tells them in Spanish, "You need to look at the picture, then count the cubes so you will know how to arrange them." The students still do not understand how to arrange the cubes, so the aide does the first row for them. The students grasp the idea and complete their cube. A migrant aide comes into the room and begins working with students, joining the teacher, the aide, and the resource teacher.

One student gets very frustrated with her group. She feels she has the answer, but the other students are not listening to her. She speaks very loudly in Spanish, stands up, gesticulates with her arms, takes several of the cubes and moves them around, then finally collapses on her desk in exasperation. Then she reaches over, takes the recorder's paper away from her, and writes the answers on it herself. The teacher comes over to this group and counsels them about working together. She then looks at her watch and announces, "It's time to stop working. Would the reporters bring their papers to me. I want the solvers to collect the task cards from your group and bring them up front. I want the readers to collect the cubes and put them back in my bucket."

The teacher now has the reporters come to the front one at a time and read their answers, explaining how they solved the problems. Some students report in English,

some in Spanish. They rotate through the groups until each has had a turn. The students are attentive and interested. Most are checking their own answers against those of other groups. The bell rings for lunch, but students continue working until the teacher tells them, "We'll do problems six, seven and eight tomorrow. Now, get ready for your awards." The aide passes out 'gummy dinosaurs' to each student, thanking them in both Spanish and English for doing such a good job and working so well together. Students are dismissed and leave for lunch. The student who had been frustrated stays behind and begins to cry. The aide sits down and talks with her, comforting and encouraging her to continue working with her group even though they seem to work slower than she does. "It's not how fast you solve the problem," she says. "It's that you can all work together to get the answers."

Problems Yet to Resolve

Teachers do not see cooperative learning as the only way of teaching, but as a valuable part of their repertoire of strategies. They are also quick to acknowledge that it has its problems. Some students are reluctant to work in groups. Frustration when others in the group aren't working fast enough is not uncommon, and some students don't want to have to wait or to explain to the others how to do something or why they got a certain answer. "It's difficult for many students to move from being an independent learner to a cooperative learner," said one teacher. "It takes a lot of perseverance and patience on the part of the teacher and a great deal of courage on the part of the student."

Some teachers, too, are reluctant to make the shift. They are comfortable with the way they've taught for years, and they like being in charge in their classrooms. "I didn't go to the workshop," one said without hesitation. "I won't go to any of the workshops. How can anyone mandate that I use cooperative learning? Besides, it doesn't work anyway. Classes are noisy to begin with. In groups students just become noisier and more off-task. And they will cheat. One person will end up doing all the work."

Yet those teachers who have chosen to use cooperative learning strategies are enthusiastic about the results. "I've found that it works with my students, and I've seen tremendous growth as a result of using it," said one. "There are exceptions, but I'm not willing to make a decision based on the exception and see a lot of wasted value." Of the teacher so vocally opposed, a colleague said, "We'll have him doing cooperative learning before long. He likes to complain and resist, so we let him until he runs out of steam. Then we give him a nudge in the right direction and he does it. It just takes him longer than most of us."

Small, But Significant

It's clear that La Vina has a tightly knit family of teachers who are committed to their students. With some guidance and a "nudge in the right direction" from their principal, they have undertaken a journey into uncharted territory with no real model to follow. They have been willing to adopt an entirely new teaching approach to achieve their vision of students fluent in two languages. Their belief that it will happen is captured in the final words of their mission statement:

"At La Vina we truly believe that

Yo puedo! I can do it!
Tu puedes! You can do it!

Juntos, podemos todos!
Together, we all can do it!"

ACTIVE LEARNING

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CHAPTER 3

Active Learning

ACTIVE learning is a purposely broad term, encompassing a wide range of both learning and instructional strategies. Almost a third of *Caught in the Middle* is devoted to advocating various active learning strategies for students and teachers.

One of its recommendations is that students "develop the capacities for critical thought and effective communication" (p. 13). For this to happen, teachers need to de-emphasize rote tasks, promote project-oriented assignments that integrate knowledge and higher-order skills, and use questioning strategies that lead to higher-level thinking.

Another recommendation is that students "develop a repertoire of learning strategies and study skills which emphasizes reflective thought and systematic progression toward the goal of independent learning" (p. 24). To help students accomplish this, teachers should use cooperative learning groups and other peer-based learning activities, provide instruction in how to study and learn, and create homework assignments that are meaningful extensions of new understandings and skills first prompted in the classroom. All of these specifications for active learning aim to enable students to become more responsible for and aware of their own learning processes.

In seeking schools that consciously foster active learning, we looked for classroom examples that would portray the many strategies that promote it. We found that the schools we surveyed had chosen not to try to implement every possible strategy, but instead to focus on teaching subsets of related skills. We identified three strands: study skills, thinking skills, and student-directed tasks.

Study skills can best be understood as "the effective use of appropriate techniques for completing a learning task" (Gall, Gall, Jacobsen & Bullock, 1990, p. 10). Study skills programs focus on improving students' generic self-management strategies (e.g., how to set goals, organize work, take notes, and set aside time for studying). The last decade has seen a burgeoning of resources and training materials specifically targeting study skills (see, for example, Gall, et al., 1990; Gall & Gall, 1987; Thomas & Strage, 1988).

Thinking skills are the complex and higher-level cognitive processes for manipulating information (e.g., recognizing patterns, extrapolating from evidence, identifying bias, reasoning by analogy). Both study skills and thinking skills programs often include explicit attention to student meta-cognition — that is, helping students reflect on their own thinking and actions. Numerous resources for both skills are available to teachers (see Brandt, 1988; Chance, 1986; Sternberg, 1983).

Student-directed tasks encourage students to select and/or complete tasks on their own rather than just carry out tasks chosen by the teacher. In curricula promoting student directed tasks, students often do their own or joint projects, work in groups or pairs (thus engaging in peer instruction and evaluation), and share instructional management responsibilities with the teacher. Elements of study skills and thinking skills programs are often incorporated.

It's clear that active learning involves much more for teachers than just teaching an extra set of thinking strategies to students; it actually challenges some time-honored conditions of teaching. Besides shifting to more cognitively demanding tasks, teachers need to give students "progressively more personal responsibility and accountability for organizing and completing their work" (Middle Grade Task Force, 1987, p. 44). Also, teachers' "current emphasis on coverage of a large quantity of information must yield to an emphasis on depth or quality of the student's understanding" (Carnegie Council on Adolescent Development, 1989, p. 43). The cases in this chapter illustrate several ways in which the staffs at five schools are implementing active learning.

Contrasting the Cases

Table 3 contrasts the five cases both organizationally and instructionally. One way to analyze the schools' similarities and differences is to consider each strand (study skills, thinking skills, student-directed tasks) separately. But it's even more valuable to look for commonalities and distinctions among the three strands, particularly since these are only three of many ways to implement active learning. The following observations and questions should help.

Observation: In all five cases, the job of actually creating an active learning curriculum and accompanying instructional methods rests with teachers. In the three cases with specific study and thinking skills programs, the newly developed curriculum came about after a small group of teacher advocates assumed responsibility. In the two cases where schools emphasized student-directed tasks, the principal played an especially strong advocate role, but the major responsibility for developing lessons fell to the teachers. This suggests that whether the impetus for active learning is internal or external, there must be 1) school site advocacy, and 2) teachers willing and able to take on the job of identifying and developing ways to extend and enrich existing curricula.

Table 3: Comparison of Active Learning Among the Five Schools

BEN FRANKLIN	BURLINGAME	MARGARITA	DE ANZA	HEWES
Organizational Attributes				
Focus on study skills as relevant to entire curriculum		Focus on higher-order thinking skills as relevant to entire curriculum	Focus on student-directed tasks embedded in entire curriculum; inclusion of some thinking and study skills activities	
Initially district-driven innovation via outside consultant (that failed); group of teachers assumed responsibility	Site-driven innovation fueled by group of interested teachers	Site-driven innovation resulting from SIP process; math teachers assumed initial responsibility	Principal-driven innovation	
Fairly prescriptive program with manual lessons and formal evaluations	Guided, but not highly prescriptive program; informal evaluations	Prescriptive program available, but teacher deviations allowed; informal evaluations	Principal-mandated philosophy; evaluations via frequent principal visits to classrooms and principal team-taught lessons	Principal-directed philosophy; informal evaluations
Some on-site teacher training; materials based partly on outside resources		Teachers attend workshops, conferences; activities drawn from outside resources; principal distributes and emphasizes research	Principal inservices all new teachers; numerous on-site workshops for common understanding	Teachers attend workshops; half-day work sessions provided for teachers
Teacher group received stipend to develop manual	Teacher duties rearranged to create development time		Principal allocates many resources and takes over classes so teachers can observe others and/or prepare lessons	
Instructional Attributes				
Taught as integrated skills in all academic subjects (divide up responsibilities)	Taught as separate *and* taught as integrated skills in core	Taught as separate course two days per week with all faculty sharing responsibilities	Infused in all classes; teachers shape curriculum according to school guidelines	
Students accountable for organized notebooks, maintaining schedule of assignments		Students complete short, non-graded problem exercises	Students accountable for individual and group projects, peer-assisted tasks and evaluations	

- Initial advocacy for active learning generally comes from a small group or single person at the school site. Who at your school would be the likely advocates? How do you identify and empower these people? Once an active learning program has been implemented, how dependent is it on the presence of the initial advocates? How could you establish a broader base of support?

- Think about the various ways that support, training, and time were created in each of the five cases so that teachers could implement active learning. Which would be most easily accommodated at your school site? Why? Since teachers ultimately must develop lessons and materials, would this help be adequate for them? If not, how might sources of help be expanded and better facilitated?

Observation: In all five cases, teachers' *initial* exposure to active learning came via pre-packaged materials and expert training. As teachers become more involved in implementation, they tend not to adopt intact programs but instead to develop their own by borrowing from, synthesizing, and expanding existing sources.

- Given that teachers have limited resources (e.g., time, access to peers), why do you think they choose to develop their own materials? What are the implications of this approach in terms of quality of materials and acceptance by peers? Is a teacher-developed active learning program a viable option at your school? Why?

Observation: All five schools have given considerable thought to how active learning can best be incorporated into the students' daily program. The study and thinking skills programs have been implemented through short, separate units added to the existing curriculum, with teachers encouraged to reinforce concepts in all academic classes. Thanks to the commitment of their teachers, the two schools that have taken a student-directed tasks approach have been able to implement the program as a major component of every class.

- The decision to implement active learning — either as an "add on" to the curriculum or infused across it — has significant implications. For teachers, what are the organizational and instructional advantages and disadvantages of each approach? For student learning and motivation, what are the advantages and disadvantages of each? Would the strand of active learning being implemented necessarily dictate the approach? Why?

Observation: In all five cases, the organizational expectation is that teachers will implement the chosen strand of active learning. In the study and thinking skills schools, teachers are expected to instruct by using a series of fairly prescriptive, teacher-directed lessons in short time blocks. In the student-directed tasks schools, teachers are expected to instruct according to a nonprescriptive, diffuse, and all-encompassing philosophy involving many simultaneous goals.

- In the study and thinking skills schools, how would you reconcile the seeming contradiction between teaching prescriptive units and modeling the primary goals of active learning (i.e., enabling students to be more responsible for their own learning)?

- The expectations accompanying a prescriptive versus a diffuse teaching approach are likely to produce different comfort levels for teachers. What would be the likely outcomes in terms of buy-in, motivation, and ultimate success, for teachers and students? Which approach might work best for your school? Why? Might there be advantages to using a combination of the two approaches? Would this be a realistic consideration at your school? Why?

A Sense of Order: Benjamin Franklin Intermediate School (Colma)

Benjamin Franklin is a one-story complex located in a lower-middle income area south of San Francisco. The surroundings consist of a fairly even mix of closely-placed, single-family houses and apartment complexes. Approximately 480 seventh and eighth graders attend the school. The student body is very diverse, composed of Hispanics (29 percent), Filipinos (24 percent), Caucasians (21 percent), Asians (12 percent), blacks (10 percent), Pacific Islanders (3 percent), and American Indians (1 percent). These different ethnicities co-exist at the school with an absence of intergroup antagonism and gang activity. The school takes pride in last year's CAP writing score, which was in the 60th percentile statewide. An important current goal is raising the other CAP scores to at least the 50th percentile.

Dates of Visit: March 6 & 9, 1990. Principal: Tom Zach.

Getting Started on Study Skills

Perhaps the most visible evidence of Ben Franklin's emphasis on study skills is each teacher's bright blue binder containing the new study skills manual used school-wide beginning this year. Developed by three of the teachers, the manual and its enthusiastic reception represent how far the school has progressed over the past five years.

Five years ago, a newly-hired superintendent assigned Tom Zach as Ben Franklin's new principal. A study skills program was an early priority, since the superintendent had received a grant to offer inservice instruction in that area to language arts teachers. So the superintendent brought in a well-known consultant who demonstrated study skills lessons and put together a book of lesson ideas. The faculty, however, didn't adopt them.

Why? Upon reflection, Mr. Zach decided that the "top-down" approach of bringing in an outside consultant was partly at fault. He sensed that the teachers also viewed the lessons as simplistic — nothing beyond some basic study skills instruction they were already doing. Though he thought that some "delusions of familiarity," common among educators, might be coming into play, he believed that the teachers' criticisms certainly reflected their lack of ownership.

Mr. Zach decided to back up and put highest priority in his first two years on "a safe and orderly environment" and "building a positive climate." After that, he would turn to more purely academic goals, including study skills. Meanwhile, the consultant's inservice had focused new attention on study skills, and some of the teachers were committed to teaching them. But the consensus was that developing a school-wide study skills emphasis was a long-term goal that would take several years.

Thus, the past three years at Ben Franklin have been a time of building momentum for study skills. Mr. Zach believed it critical to first develop a knowledge base. He began to compile his own notebook of resources on study skills based on ERIC literature searches and his own reading of professional journals and other borrowed and purchased materials. Several key teachers also collected resource materials. Principal and teachers gradually began to agree on some common approaches. At the same time, the state's *Caught in the Middle* and Program Quality Review helped reinforce teachers' determination to develop a study skills program. Both emphasize the importance of "learning to learn." All Ben Franklin teachers, says Mr. Zach, were given copies of *Caught in the Middle* and had time to discuss it during faculty meetings.

After a year of such preparation, three teachers began writing the school's own study skills manual. Paid a total of $1,250, they each devoted five intense half-days to getting most of the writing and organizing of the manual done. "We wrote our hearts out," said one. They borrowed liberally from many sources to develop a significant number of lessons, but also created many of the lessons themselves, along with a plan for each. Subsequently, they used personal time to see production through to the distribution stage. The authors view the manual as a working document that they intend to refine and update over time.

A Two-Pronged Approach

Study Skills Manual. The resultant blue binder contains a hefty number of color-coded pages, organized into seven study skills topics: (1) use of textbooks, (2) study habits, (3) organizational skills, (4) goal setting, (5) listening skills, (6) notetaking, outlining, and summarizing skills, and (7) test taking skills. There are 55 lessons in the book, with each topic section containing four to 14.

Even if students flunk the tests, they don't get a failing grade so long as they hand in an organized notebook.

For each lesson the authors include an objective, an "anticipatory set," and an activity. Some involve handouts and/or teacher information such as surveys or even complete (but very short) lectures. Nothing in the manual should take more than 20 minutes, say the authors, who deliberately aimed for "short bits." "Nobody wants an extra prep," one explained. "Many of our teachers are delighted to find that this is user-friendly. They can just go right into the manual, grab a lesson and do it." The book includes an introductory section describing a rationale, student pre- and post-tests, and teacher checklists for recording when particular lessons are covered. At the back is a short glossary, a list of textbook sections that reinforce specific study skills, and a bibliography.

At this year's first faculty meeting, every teacher received a copy of the manual, and the authors explained its use. Responsibility for covering study skills was assigned at random among the academic departments. All departments were asked to address the first study skills area, use of textbooks. The math department was assigned major responsibility for covering study habits and goal setting; the language arts department for listening and notetaking skills; the science department for organizational skills; and the social science department for test taking skills. Each department was required to cover assigned areas during the first quarter, providing follow-up and review through the rest of the school year. Any study skills area or lesson could fall within the purview of any faculty member who viewed it as important and helpful for his or her students.

Student Notebooks. Described in the organizational skills section of the study skills manual is a student notebook system in all academic subjects. Under it, students are required to keep a separate notebook for recording and organizing their work in each subject. This system evolved from the efforts of "early crusaders" on the faculty and was well-developed and practiced several years before the advent of the manual. Besides the manual itself, it is the one other pervasive means by which study skills are encouraged among Ben Franklin students.

The first lesson from the organizational skills section reads as follows:

"All teachers will be asked to design a system that allows for a small part of each student's evaluation or grade to be his progress with maintaining the notebooks and assignment page. This will mean some final checking of the notebooks as well as several spot checks throughout the quarter or semester. Again, the systems for the percentage to be accounted for by the notebooks will be the responsibility of individual teachers and their programs.

"Each teacher will develop a plan to instruct the students about the use of the notebook for that particular class. The first page in each notebook or notebook section should be an assignment page. It will be critical for students to record the date of the assignment, a due date, the nature of the assignment and other special notes. It is assumed that there will be a variety of systems due to teacher choices."

Most of the teachers employ a simple, common format for the assignment sheet, with left-hand columns for the assignment dates and a right-hand column for the nature of the assignment (typically, a set of page or problem numbers). A popular alternative format is a block calendar sheet where students record the assignment in the appropriate square. The rest of a student notebook consists of student work organized and partitioned by a set of notebook dividers with labeled tabs. Here again, each teacher exercises discretion. One language arts teacher, for example, mandates three dividers labeled "spelling," "notes," and "tests." Another language arts teacher has four dividers labeled "journal," "handouts," "notes," and "returned assignments." A math teacher has three dividers labeled "drills," "assignments," and "notes and tests."

Another element of the notebook system is that teachers are encouraged to keep the assignment sheets for each of their classes permanently posted in the classroom. This way, students can take responsibility for double-checking an assignment or making up for missed work. Finally, as indicated in the manual, teachers collect and check student notebooks near the end of each term so as to base part of a student's grade on it. Several teachers expressed the view that this system ends up helping lower achievers in particular. As one teacher says, "Even if students do all their problems wrong and flunk the tests, they won't get a failing grade if they hand in an organized notebook." Conversely, many teachers seem to agree that students should flunk a course if they do not have a notebook. A couple of teachers estimated, however, that only one to seven percent of students meet this fate.

A Listening Skills Lesson

Today Ms. I, a language arts teacher, is reviewing two lessons from the listening skills section of the manual. Her seventh graders are energetic and social. The majority begin to focus attentively as the teacher writes five letters vertically on an overhead transparency: "LINKS."

"What do these letters stand for?," she asks. Many hands go up. By calling on various volunteers, the teacher fleshes out the acronym:

Listen
Identify
Notes
Key words
Summarize

"When do you use 'LINKS'?," she asks.

"When you listen to the teacher talk," a student answers.

Ms. I then asks what kinds of cues help when listening to the teacher. Without waiting for answers, she puts a second list up on the overhead:

Cues

- Emphasis
- Organization
- Content
- Manner

She asks for examples of each kind of cue, and students oblige. Under "content," for example, a student says you can pay attention to the "what, where, and when."

Turning to the second exercise, Ms. I announces that she will read through a short paragraph about Abraham Lincoln and that they should listen and try to identify examples of the four cues just discussed. She reads from the manual:

"Abraham Lincoln was elected to two terms as president, but he did not live to serve his second term. While at the theater with his wife, on the night of April 14, 1865, he was shot by John Wilkes Booth. Lincoln died the next morning in the house across the street from the theater where he had been taken after being shot. Booth was reported dead a few days later. The exact cause of death is still uncertain."

She reads with animation, emphasizing several phrases. When she's done, she pauses and asks students to volunteer any cues they found. One student suggests that the organizational clues included the date and phrase, "next morning." A couple of students identify the teacher's voice and gestures as cues of emphasis and manner. Several students in unison say that the content cues are the names of Lincoln and Booth. The teacher finally sums up: "You can use these tools of LINKS and cues to increase what you can remember from a lecture." The class continues with the teacher assigning students to read a section from their textbook.

A Notetaking Lesson

In Ms. L's 8th grade social science class, the entire period is devoted to a lesson on notetaking, adapted from several lessons in the manual's notetaking, outlining, and summarizing skills section. Ms. L is one of the manual's co-authors. The lesson starts and develops at a brisk pace, indicating the teacher's fluency with the material.

Ms. L tells students to get out a sheet of paper and label it properly with name, date, subject, and period; they will be doing a "mini-project" on notetaking — an opportunity for them to earn 50 extra "project points." What she is about to cover, she says, is a review.

To begin, Ms. L reads an excerpt from the manual:

"The purpose of taking notes is to help you learn. Your notes help you learn when you first write them down; taking notes helps you figure out what's important in what you're reading or hearing. Also, taking notes gives you a record of what you need to know for the future. You can use your notes to study for tests.

"Think of your notes as a map. What you should write down as notes are words and phrases that will help you to remember the main ideas of what's been said or what you've read. Just as a map leaves out a lot of detail, so can your notes. Also, always write your notes in your own words.

"This unit will show you two effective ways of taking notes: outlining and mapping. Try using both of them and discover how well they work for you."

Ms. L then announces, "We'll now work on two ways to capture what I've just read." She puts a notetaking template on the overhead projector. It appears as a wheel with four spokes labeled: (1) purpose, (2) type, (3) map, and (4) rewrite. A number of blank, horizontal lines stem from the spokes. Ms. L solicits suggestions on how to fill in the blanks (see attachment 1), referring back to the initial paragraphs as necessary. She instructs students to copy the map, and she emphasizes that using the skeleton of one's notes to summarize text is preferable to copying directly from the text.

Ms. L switches quickly to a new overhead. This one is the template for a standard outline, written in black felt pen. She tells students they should be able to fill in most of the outline based on the other map they have just completed. The only new part is a section labeled "outline." A standard outline, she explains, consists of main ideas and details. She will denote these with black and green ink, respectively. With many student volunteers, she rapidly fills in the details of the outline with her green felt pen. (See attachment 2.)

As students are copying the outline on their papers, Ms. L adds a third component to the lesson: "I want you to turn your notes — the map or the outline — into your own written paragraphs. There are five main ideas, so it makes sense to have five paragraphs. Remember that a paragraph can be one sentence long." She tells students to start their first paragraph with a

"grabber" sentence and asks for an example. A boy volunteers: "One way to gather information is to take notes." The teacher commends his suggestion and writes it on the overhead. The bell rings. Ms. L announces that students should finish this assignment as homework.

A Good Reception

The manual's authors estimate that approximately half the faculty now teach study skills lessons on a regular basis. Since this is the manual's first year, this level of "buy-in" is considered a ready reception.

One reason for such strong early acceptance, says the principal, is that teachers believe their students need the study skills program. "Teachers feel that today's students don't come to school as well prepared. Many are not organized, and parents are not inculcating the same values they used to." The manual itself had a ready audience since it captures much of the teaching already being done by a core of teachers. It serves to encourage a *consistent* program that a larger number of teachers could follow.

The program also has the strong mark of school ownership. Authors say they felt compelled to develop their own manual because "nothing we could find was directed toward the middle school." Mr. Zach adds that even if a school adopts a prepackaged program, it's important to "massage" or "filter" it through the school's own process. "There could be substantially one source or another that predominates, but teachers have to take it over and 'make it ours.'" He further noted that most of the packaged study skills programs he's seen either were not relevant to what teachers really do in classrooms or were too complicated to suit teachers' limited time.

As for funding, Mr. Zach says, "If you have categorical funding, you can do a study skills program." However, he adds, the funding will only be put to good use if you start from a knowledge base and have a skilled staff. Further, teachers have to experiment with the program in their classes and the school has to be willing to "give it several years."

How have Ben Franklin students responded to the program? "It's important to them," said one teacher. "They'll often give me reminders like, 'We forgot to do the calendar.'" One boy said of his math teacher's approach: "We learn strategies, how to work out a problem, how to eliminate possibilities — you can use that for everything, you know."

Things to Work Out

While generally positive, teachers are quick to offer suggestions on how to improve the program and teacher implementation. For starters, the manual's authors recommend further editing and updating of the manual, incorporating suggestions from all teachers who've been using it. For example, one teacher urged changing some lessons because they take longer than the manual says. This teacher also stressed the value of teachers critiquing the manual together so that they can share their experiences with it and jointly reflect on what they would change.

Several teachers also agreed that their introduction to the manual at the beginning of the year was too brief. They spoke of wanting more time for inservice training, including the presentation of model lessons for a better understanding of the materials and how to use them. They felt such training would also encourage as yet reluctant teachers to more actively promote the study skills program.

Other teachers spoke of the difficulty of integrating parts of the program into some subject areas, particularly math. One math teacher found the lessons on the textbook, notebook organization, test-taking and goal setting useful but had problems with the section on notetaking: "Taking notes in math isn't the same as in language arts or social studies."

All teachers contacted agreed that the student notebook system is helpful and worth keeping. A couple suggested that the system might be easier for students to manage if they could keep all their subject work in one larger notebook. Students, when interviewed, concurred.

Finally, teachers raised some critical questions about how and when study skills should be taught. The manual's authors expressed the view that their book was not intended as the syllabus for

a separate course, but rather as a resource that works best when integrated into existing content lessons where students can immediately see the usefulness of the skills. However, they conceded that the program might be launched more successfully in each content class if the first week of school were devoted almost entirely to study skills (as opposed to allowing teachers a month to cover their sections).

Though the authors believe that a separate study skills course should be considered only for at-risk students, not all their colleagues agreed. One language arts teacher felt that a separate course would ensure that all students get the necessary skills. A math teacher expressed frustration that she had to "suspend regular teaching" to cover some of the study skills material.

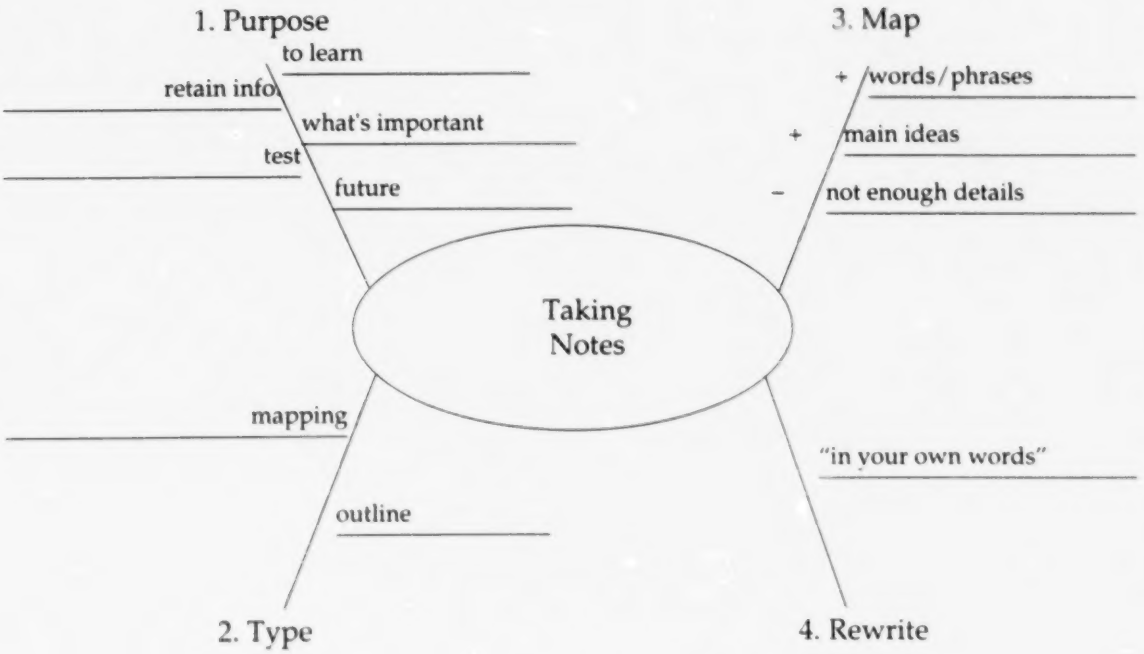
An Identity for the School?

The principal's biggest concern about the future of study skills at Ben Franklin is whether the program can continue in the spotlight, given limited resources and competing priorities such as improving the school's CAP scores. "I feel the teachers are torn between covering the broad scope of their subject areas and adding a study skills element," he said. There is also a desire to implement additional middle grade reforms. For example, this is the first year that interdisciplinary teams of teachers have begun to meet. The school is also considering instituting an advisement program — but this, says Mr. Zach, might actually be a vehicle for covering some study skills.

Just how to carry on the study skills program will be decided among school administrators and faculty in the spring as part of a self-review process. Mr. Zach's own view is that the decision should be made with an eye on Ben Franklin's future. If the district should move toward open enrollment, this program that helps students create order in their schoolwork may be a critical factor in "selling the school" to parents, thus keeping its enrollment strong.

Ben Franklin: Attachments

Attch 1
Notetaking Template



Attch 2
Standard Outline

Outline (Topic)

I. Purpose
   1. to learn
   2. what's important
   3. future
   4. retain information
   5. test

II. Type
   1. mapping
   2. outline

III. Mapping
   1. words/phrases
   2. main ideas
   3. not enough details

IV. Outline
   1. main ideas
   2. details

V. Rewrite
   1. "in your own words"

No More Alibis: Burlingame Intermediate School (Burlingame)

Burlingame Intermediate School serves over 600 students in grades six, seven, and eight. Seventy-three percent of the student population is white, with the remainder consisting of Asians (18 percent), Hispanics (seven percent), and blacks (two percent). The school is situated in what is widely considered one of the most desirable upper-middle class communities on the San Francisco peninsula. The facility is laid out in several separate one-story wings on ample grounds in a quiet suburban neighborhood. The longstanding administration and staff have been active as middle school advocates for some time. Burlingame Intermediate is a regional Foundation School.

Dates of Visit: February 20 & 23, 1990. Principal: Robert Welch.

Impetus from Parents

While certain study skills have been taught to some students at Burlingame Intermediate School (BIS) since 1981, the school currently has a multi-faceted study skills program designed to reach all students. According to Principal Robert Welch, interest in such a program had been growing among parents, administrators and teachers. Several years ago, parents of fifth grade students began voicing concerns: "At BIS, the kids will get so much homework. Are they going to be able to keep up?" At the same time, other parents expressed enthusiasm about an extra-curricular, 12-hour study skills course for junior and senior high school students being offered by a local educator at the end of each year — a course so popular that beginning-of-the-year sessions were added. Said the vice-principal: "We found ourselves telling more and more parents about this study skills class for $75 and thinking, 'If there's this much demand, why aren't we offering it right here?'" Many teachers concurred, noting a lot of disorganization in students' school work. As one put it, "Anybody who teaches recognizes the need for these kids to have better study skills."

So three years ago the faculty chose this topic as the focus of a new sixth grade explorative class. "One of the things we talked about time and time again was that our kids come to us from small, contained classrooms where they're not moving from teacher to teacher," says Mr. Welch. "They don't know how to organize a notebook. They're used to having a desk where they can pile everything in and pull it out any time of the day. They don't have a sense of taking notes, outlining, or reading in content areas."

Like all exploratives, the study skills class lasts five-and-a-half weeks. All sixth graders rotate through it during the school year. (Other sixth grade explorative classes include art, computer science, drama, homemaking, music, and shop.) Study skills is taught by Ms. S, one of seven teachers who teach sixth grade core — a four-period block encompassing English, reading, social science, and health science. Ms. S developed the course because she already was recognized among her peers as someone who used creative strategies to teach vocabulary and study skills. (An outline of the study skills course appears in the attachment.)

A Visit to the Study Skills Class

It is the second week for this rotation of the study skills explorative, but the 27 sixth-graders already seem comfortable in the class routine. Immediately, they open their binders to practice the four new shorthand symbols for the day. An overhead offers guidance:

government	amount	equals	isn't same as
gov	amt	=	≠

Making a column for each shorthand symbol, students copy each one 25 times down the length of the page. As they finish, Ms. S quickly reviews this and two previous sets of symbols.

Next she announces they will play a short game to test their fluency with the symbols they've covered. She asks them to work in pairs. As students shift their desks, she draws a blank "tic-tac-toe" grid on the overhead and asks them to copy it. "I'm now going to read off the words for the 16 symbols you know. The first person to write down the correct symbol gets to put their initial in the grid. How do you know if you're right or not? You put it down, then look up here and verify it. If you have a dispute, just call it a tie. If at the end of eight words you have not scored a win, call the game a draw. I suggest you each write your words very closely together so you can see who's first."

She reads off one set of words, writing each word and the corresponding shorthand symbol on the overhead. A jovial hum fills the room as student pairs rush to write down their symbols and compare speeds. At the end, the teacher says, "The person who wins gets a point."

Game over, students shuffle papers and return to their original positions, Ms. S redirects their attention with a new overhead:

Hint of the Day

1. **Never** study without a pencil in your hand and a paper in front of you. **Always** study in the same place.

2. **Always** use the same "start" signal. For example, sharpening a pencil, turning off the radio, etc.

Ms. S has added the second hint to her list today. She begins an animated presentation of her rationale, feigning a slumped and agitated sitting posture at a desk in front of the room. "A lot of kids — and adults — do this," she says. "They sit down and say, 'Well, I'm going to start my homework any minute now. First maybe I'll just read the comic books a little bit. You know, I forgot I told what's-her-face I'd call her. I wonder how many cookies are left in that jar. I wonder if the dog has enough water. Oh, I'll start in a while. Gee, look at the minute hand on that clock. Doesn't look like it's moving, but I bet if I look at it long enough, I can see it move.'

"See how easy it is to put it off and put if off and put it off at the beginning? But if you have a definite start signal and you decide what it's going to be, you sharpen a pencil and *that's it*. You turn off the radio and *that's it*. Once you turn off that radio, boy, it's down to work. If you can set up a signal like that and stick to it, your concentration will be a lot better. Speaking of concentration, you're about to get thin strips of paper that will be face down on your desk."

She quickly rotates around the room and puts a slip of paper on each desk. She tells students that at her signal they should turn their slips over and memorize as much as they can in two minutes. She warns them not to write anything down as they memorize. At the end of two minutes, she instructs them to sit on their slips, then take a sheet of paper and "write down what you remember." After several minutes, she tells them to stop. She reads off the words, telling them to give themselves a point for every word they remembered.

Meanwhile, Ms. S has put a blank sheet up on the overhead. She explains that some students received "A" slips while others got "B" slips. "A" slips contain 20 words in a random order. "Bs" list the same words organized under four category headings (e.g., under the heading "sports" appear

basketball, long jump, frisbee, tennis, and football). She then announces that she will tally, average, and compare the scores of the "A" versus "B" students. She records scores on the overhead, and a couple of students help her average the numbers with their calculators. As expected, those students with "B" lists have an advantage over "A" list students (in this instance, 15.7 versus 14.5 words).

After soliciting several responses from students as to why she did this exercise, Ms. S summarizes: "Think of your brain telling you that if you have information you've got to memorize or study, it wants that information organized in categories. Your brain can absorb categories much better than random information.

"Speaking of categories, would you please write on a piece of paper the colors of the rainbow in order." There is good-natured grumbling as students start to write. A few indicate they are lost, and one boy says the clue: "ROY G BIV." The teacher writes this on the overhead, then quickly reviews two more mnemonics: "HOMES" for the names of the Great Lakes, and "Never Eat Shredded Wheat" to guide the proper placement of the four compass points. She then writes two columns of letters on the overhead and asks students to copy them and guess what they represent. Several volunteer that they are the first letters for the months of the year. She then asks students to write down the correct number of days in each month next to the proper letter, announcing that next time she will teach them a system for remembering the number of days. The bell rings.

Three days later, Ms. S's class again begins with a shorthand exercise. This time, several rounds of the "tic-tac-toe" game are played up at the board with two students challenging one another. At the end of each round, the winner remains up at the board while the losing student selects the next opponent. When the game ends, the teacher gives students a reminder about keyboarding — they should always rest their fingers above the middle row and never cross over. Next she shows them a 20-minute film entitled "Researching and Writing a Report." When it ends, she passes out small yellow post-its. She instructs students to write down the point from the film that most impressed them and place it in their "Binder Reminder" calendars on the space for today's date.

She spends the last five minutes of class on notebook checks. Four volunteer students join her at a table, while the rest are asked to do other class work or "think." At the table, she asks students to pass their notebooks clockwise so that they can correct one another's work. She gives four criteria for the check:

1) Is there a container for pencils and pens with a least two implements in it?

2) Do things look organized?

3) Look at the "Binder Reminder" calendar for February. Has the student been filling it in?

4) Does this notebook pass the non-violent flutter check? This requires picking up the open notebook by its leaves and shaking it upside down to make sure no papers or materials fall out.

As students conduct the checks, Ms. S provides more post-its and tells them to insert notes on any problems and make rewarding comments as well. Then she takes out her own grading book to record whether students passed the check. With time running short, she turns to the rest of the class and asks them to bring homework for tomorrow so they will have something to do when the notebook checks continue.

Precursors to the Explorative

It's important to note that BIS developed critical elements of a strong study skills program long before the advent of the explorative class. Not only did some teachers develop activities on their own, but study skills played a role in two longstanding courses — language skills and the Skills Center class, both taught by Ms. C.

Language skills, started nine years ago, continues today. It targets remedial students — in this case the approximately one quarter of the student population who score below the 40th percentile on verbal tests. Students attend in lieu of taking a foreign language. The class is organized so that they work in three small groups with the teacher and two aides. The groups rotate through four different centers during the week: literature, reading, writing, and skills. Specific topics covered include identifying the main idea, sequencing within stories, outlining, differentiating between fact and opinion, and reading between the lines. On the day this class was observed, students in the reading group were reading silently at their desks, an aide circulating among them. The writing group worked with Ms. C on sequencing sentences. At one point, each student received a small plastic bag containing five different slips with sentences. They were asked to write down the sentences on a worksheet in the most meaningful sequence. The skills group, directed by an aide, worked on a series of exercises in which they had to identify whether a sentence expressed fact or opinion. At one point, each student received a packet of approximately 10 cards in a small plastic bag. One card read as follows:

> Fly to Florida this summer. Our planes leave New York every hour. In less than three hours, you can be in Miami, Florida.
>
> **Fact or Opinion**?
> This story states:
>
> A. **Fact**
>
> B. **Opinion**

Students went through all the cards and wrote down "A" or "B" on their accompanying worksheets. They then graded themselves and went on to complete two more packets. As the period drew to a close, the teacher and aides gave each student a grade for the day, which was recorded in their progress folders.

The Skills Center, now defunct, had been offered for seven years to seventh and eighth graders one day a week. It was organized so that students rotated among a set of six stations over the course of the school year, with nonredundant activities from one year to the next. One of these stations was for study skills. There, students covered such topics as "getting a head start," "test preparation," and "good reading habits," using a wide variety of materials including commercial film strip packages and computer software. The class was discontinued this year for several reasons, including the difficulty of maintaining a huge bank of activities and the school's need for classroom space. But perhaps most important was the realization that BIS had developed other, more integrated ways to address study skills. Despite its demise, the Skills Center helped foster an awareness among faculty of the purpose and nature of study skills activities. Further, until recently it was the only formal opportunity for students of all ability levels to acquire study skills.

Today: More than a Single Course

Today's sixth-grade study skills class is supported at BIS by several other efforts. The school's head librarian, for example, meets with sixth and seventh graders for several scheduled lessons in the Media Center where she covers the topics of reference tools and research skills. And this year, BIS instituted two other vehicles for encouraging good study habits: first, all core teachers at all three grade levels now include a two-week introduction to study skills at the beginning of the school year; second, all students use a "Binder Reminder" in their notebooks.

The introduction to study skills came about largely because parents were very pleased with the explorative class but concerned that many sixth grade students had to wait until well into the school year for their rotation through the explorative. The primary purpose of the two-week introduction is to get students to organize their work from the very beginning. The principal noted that Ms. S was central to the effort; she put together a package of outlines and worksheets that capsulize what she does. Though the content in her classes

may appear repetitious, faculty and parents feel that the students need constant reminders.

Core teachers seem unanimous in valuing the study skills introduction. However, its implementation probably varied widely this first year. Two core teachers said they found it difficult to devote concentrated time to study skills during the "shuffle" of the first couple of weeks. "Some didn't pick up on the importance being placed on this campaign," said one. "So we had quite a few forceful reminders in faculty meetings." Another expressed a preference for integrating study skills into his content classes throughout the school year: "I don't make study skills separate from the rest of school work. I weave it into what we do."

The "Binder Reminder" is a notebook-sized booklet designed to fit into a standard three-ring binder. The school purchased the booklets from a commercial publisher in California for approximately $1.70 each. The first seven pages are customized for the school. They include the principal's message, general school rules, the bell schedule, and a school map. A short section describes study skills:

> A student who studies well
>
> 1. brings notebook, paper, pen or pencil, and other materials necessary to class.
>
> 2. is an active participant in the classroom; listens well; takes part in discussions.
>
> 3. asks questions if he doesn't understand the discussion or if he has a problem.
>
> 4. plans his work and schedules for homework each day; makes sure he understands the assignment before he leaves class.
>
> 5. uses what he learns; sees how each subject applies to the others.
>
> 6. strives to do his best, not just get by.

The remainder of the booklet consists of generic material from the publisher, including various options which a school can choose or adapt. Generally, each page represents a week in the school calendar. For each day, there is space for students to list assignments and priorities. A section devoted to "decision-making" and "time management" illustrates how best to use the calendar. Other pages in the booklet contain miscellaneous information such as a multiplication chart, periodic table, U.S. map, and list of U.S. presidents. A two-page "Study Guide" lists over 70 recommendations for budgeting time, taking notes, preparing for tests, etc.

The principal is enthusiastic about the effectiveness of the Binder Reminder, particularly as a means of communicating with parents: "Parents are saying, 'Now I know there is something that is easily identifiable — a blue book — that I can go to and say, 'Hey, let me see your Binder Reminder.' It's a common term now for parents and kids." The vice-principal also noted that parents' ability to check daily on their children's assignments is a big improvement over the previous system of weekly progress reports.

Teachers are also positive. One commented: "I do see a change for the better. Kids who normally wouldn't be careful are quite faithful about using their binders. I usually put the week's assignments on the board on Monday. Now they write them down, which they didn't always do before. More than anything else, it's doing away with that wide-eyed ignorance — 'I didn't know! You never told me!'" Another teacher pointed out that the Binder Reminder also reveals which teachers are organized. "Everyone likes it, but there are some who don't bring it to the forefront. They need periodic reminders."

As for students, several sixth graders estimated that well over half their peers regularly use the Binder Reminder to record assignments — an estimate in line with the principal's.

What Kind of Change?

Active discussion at the school focuses on a key question: What student outcomes will be improved by BIS's dedication to study skills? Mr. Welch noted that standardized test scores started improving quite a few years ago, shortly after the inception of the language skills class and Skills Center. He also pointed to day-to-day indicators of

behavioral change — specifically with reference to the Binder Reminder. Visiting classrooms, he not only heard teachers remind students to use it, but saw assignments jotted down in students' notebooks. He especially mentioned one boy, a most unlikely candidate to be cooperating with study skills. A spot-check of the boy's Binder Reminder showed that in fact he was writing in it. "Now, I know he's been prodded by Directed Study Hall. But if he's doing it, then a heck of a lot of other kids are too." A couple of teachers have observed changes in student awareness and, to a lesser extent, behavior. One commented: "It used to be when I would go to kids and ask, 'What are you going to do to solve your problem?' they wouldn't know where to begin. Now they say, 'Well, I can do this and this.' I now see they know a process for managing their lives — whether or not they follow it." Another teacher noted a different kind of plus: "It takes away their alibis."

These teachers agree that ultimately the best indicators of success would be student behavior, not test scores. (They are reluctant to link study skills and test performance, noting that too many other factors can influence test scores.) Like the principal, teachers regard student use of the Binder Reminder as a behavioral success. But they hope to eventually see more far-reaching change. Said one: "If I see kids being conscientious about what work is due and when it is due, about their own study habits, about management of their own personal lives — to me that would mean success." Such broader indicators, teachers believe, may not be noticeable for a couple of years. They're looking expectantly to the time when the current sixth grade class has progressed to eighth and become the first cohort of students to have received the school's full menu of study skills supports.

Working at Getting Better

BIS's administration and faculty are committed to their focus on study skills, anticipating an even better program and better student response in the future. Mr. Welch noted that BIS owes much of its success to key faculty who were creative and willing to develop and write the curriculum. He supported these faculty efforts by providing some work time (usually as a release from other duties) and materials.

Mr. Welch outlined several kinds of changes he hopes will occur. First, he would like to adapt the Binder Reminder so it fits BIS's school calendar, includes each subject area every day, and incorporates a place for parent or teacher initials. Second, he expects that core teachers will develop a stronger introductory unit to study skills, given repeated opportunities to do so. Third, he hopes the study skills taught in the explorative class could be integrated into other subject areas "so that as a total staff, we will truly be more accountable to reinforcing study skills across the curriculum." And fourth, he thinks it might be beneficial to reduce the number of students in the language skills class by lowering the cut-off. This would increase the responsibility of core teachers to cover skills strategies in their classes.

For others moving toward a study skills focus, Mr. Welch identified some potential obstacles. One is that some teachers may view study skills as an additional preparation, a fact that may have contractual implications. At BIS this wasn't a problem. "Teachers saw the program as a necessary entity that middle school kids need." A second obstacle, he said, is the tendency to try to include skills that the students aren't developmentally ready for — extensive notetaking, for example. A third problem may be training of personnel. "As far as I know, no one offers inservice on training of study skills. So staff almost has to be self-trained." He also urged identifying a curriculum that supports study skills. And he warned against merely buying the Binder Reminder or other packaged materials and expecting students to use them without a course that explains how and why.

As for teaching study skills in isolation versus integrating them into other subjects, Mr. Welch favors doing both. When study skills are relegated to the core only, he says, you run the risk of integrating too much. "Things get lost." If taught only as a separate course, however, study skills might be ignored by the rest of the teachers, and students might never really learn how to apply them. By having a specialized course *and* including study skills in the core, the school can strike the best balance.

Burlingame: Attachment
Study Skills Course Outline

Title: Study Skills
Level: 6
Brief Description:
Study skills provides sixth graders with essential methods of organizing materials, proper study environment guidelines, strategies for mastering information, dictionary, library, and note-taking skills.

Objectives: Students will
1. Demonstrate an ability to organize and self-monitor. Maintain over a five-week period a binder with paper, pens, pencils, and completed assignment sheets.
2. Use simple tricks to help them memorize poems and facts.
3. Recite the poems and take tests on facts learned.
4. Use the SQ3R method.
5. Be able to map information culled from an article.
6. Demonstrate an increased awareness of the necessity of listening skills.
7. Show by pre- and post-tests an increased ability to follow written directions
8. Monitor their daily schedules for self-evaluation of how their time is spent.
9. List all homework assignments on a provided sheet; check items as accomplished.
10. Be able to rank their own "things to do" list — "most-important" to "least-important."
11. Make flashcards for "concentration" study game on foreign countries and capitals.
12. Take a pre- and post-test to show increased knowledge of those capitals.
13. Map an oral lecture.
14. Improve their dictionary skills.
15. Increase their library skills.
16. Use a list of "commonly misspelled words."
17. Maintain a list in their binder of the "Study Hint of the Day."

Course Content:
1. Binder Requirements
   - Pens, paper, pencils, plastic bag, homework assignment sheet
   - Brought to class daily
   - Must pass "flutter" test given half-way through course and at end of course
2. Memorizing Tricks
   - Mnemonic devices, both student-created and teacher-provided
   - Poem recitation
   - Flash cards
3. SQ3R Method
   - Silently read
   - Question
   - Review
   - Record
   - Recall
4. Mapping both written and oral information
   - Done as a class
   - Done in groups
   - Done independently
5. Following Directions
   - Listening skills
   - Written directions
6. Schedules
   - Daily homework schedules
   - Weekly schedules
   - Ranking of work from most to least important
   - Time monitoring
7. Dictionary Skills
   - Phonetic spelling/pronunciation/syllabication
   - Finding correct meaning
8. Library Skills
   - Locating areas of our Media Center
   - Using card catalogs
   - Using resource books - almanac, thesaurus
9. Bibliography

Grading: Student will receive points for their performance in these areas:
1. Daily assignment sheets with check-off
2. Organized binder (flutter tests)
3. Making and evaluating a goal a week
4. Monitoring time sheet
5. Ranking of priorities sheet
6. Quiz on foreign capitals/poem
7. Final binder check at end of course with all sheets completed

Resources:
1. Tony Basques' Study Skills Handbook
2. "The Write Source"
3. "Research Skills A & B"
4. Teacher Instruction

Evaluation:
1. Daily assignments
2. Teacher observation
3. Recite the poems and take tests on facts learned.
4. Tests

It Has to Fit: Margarita Middle School (Temecula)

Margarita Middle School is in the south Riverside area, midway between Orange County and San Diego. The school opened three years ago when the district needed more space for its burgeoning numbers of students and so moved 19 portable buildings onto an empty piece of property. At present, 500 sixth, seventh and eighth graders attend Margarita, but enrollment is growing at a rate of 30 to 40 percent each year as new families move into the area. (Over 1,500 new houses are under construction; new developments start daily.) Permanent buildings are under construction at the site, expected to be completed and ready for student occupancy for the 1990-91 school year. Students are from economically diverse backgrounds. Achievement levels tend to be average. Margarita has been selected as a Middle Grades Partnership School.

Dates of Visit: October 24-25. Principal: Linnea Hedlund.

At 9:30 A.M., Ms. Hedlund, the principal, stood watching in the morning sun as PE students played volleyball on a hillside court. She was there to observe two students in particular. They had just registered at the school, and she wanted to see from the outset that they felt accepted and welcomed. Satisfied that the two were involved and included in the activities, the principal left the hillside smiling.

Creating a Vision: It's Like Building a Puzzle

The principal and staff at Margarita are exceptionally committed to the concept of middle school as a place that furthers the well-being of its students. This philosophy fosters a willingness to make change, and many new programs have been tried at Margarita. Some have become successful after several modifications. Others were abandoned when it became clear they weren't a good match for Margarita's particular needs. "What we do here has to fit the unique needs of this staff and these students," explains one teacher.

This kind of thinking has been cultivated by the principal, who has worked hard to establish her own middle grades vision. Several years ago, while principal of the only middle school in the district, she attended numerous workshops and conferences where ideas for middle school reform were beginning to take shape. She spoke with conference leaders and other administrators around the country about what these ideas meant organizationally and philosophically, read numerous research articles and materials, and became a member of the National Middle School Association (NMSA). By then she felt conceptually well-grounded, but not yet ready to implement. "All the ideas about what works were pieces to an incomplete puzzle."

The missing pieces fell into place when she attended a state-sponsored, three-year program for district administrators at the Administrator Training Center. During this training, she came to see the need to unify all that she'd learned. More important, she saw that implementing her vision required sharing it with others and encouraging them to buy into it. "A leader with no followers can't lead. I needed to talk to people about my expectations, then get them to talk to each other." She began talking with board members, district administrators, and staff members. "I had to say to myself, 'Wait a minute! I know this stuff, but they don't. I started pulling teachers in and sharing information with them. It became obvious that we needed to discuss this information openly at staff meetings. We had to talk about what it was I expected a middle school to be." At one such meeting, she had her staff brainstorm a long list of things they believed in. From their list, they generated a slogan to rally behind: "Making a Run for Excellence."

Two Central Beliefs About Children

A year later, Margarita Middle School was established. Ms. Hedlund and about half her staff moved to the new school. Their common, firmly rooted belief system and commitment to reform created an environment that fostered the same thinking in new teachers.

"Whatever we do at Margarita, we do not lose sight of our two basic beliefs about children," says Ms. Hedlund. Those tenets are that all middle school students should be genuinely cared for and know they are cared for, and that all middle school students should be successful and accepted.

Vision sharing became an ongoing process. The principal duplicated information from NMSA publications and gave it to staff members to increase their awareness of what makes middle schools unique. "We didn't read anything outside of these booklets because we didn't want a difference of opinion. With a common base of information, we started jigsawing historical information on middle schools so the staff could share thoughts on 'old versus new.'" They also discussed characteristics of middle school students, as delineated in the NMSA's *This We Believe*. "It really made a difference," said one teacher. "Many of us had thoughts about the students we were working with, but I don't think the majority of us had really looked at all the data on what makes these students so special, what these characteristics meant to us as teachers, and what we could do to better meet their needs."

Ms. Hedlund began bringing board members, staff members, and district administrators with her to middle school meetings and conferences. "This built support for change, helping everyone to see why we were making some of these changes." Basically, she says, we had to move Margarita away from being a mini high school — and both staff and board needed to see why such a move was important.

Translating the Vision Into Reality

Once staff members, board members and district administrators had a common base of understanding about middle schools and their students, the principal began promoting group discussions about what these characteristics meant in terms of classroom interaction and teaching. "You can understand that a child's bones are growing, but what does that mean in the classroom? How does it affect what or how you are teaching?" One issue, for example, is helping students develop social skills. "If that's what I want to do," says Ms. Hedlund, "then I should be doing lots of cooperative learning."

She sent teachers to workshops on specific teaching topics, such as cooperative learning, use of inquiry methods, concept formation, interactive learning, and cross-curricular teaching. "We needed to look at how to get information across to students so that it was more than just a lecture. We wanted to know what else we could do." She stressed planning as a critical factor in teaching. Planning allows teachers to go beyond giving out information and expecting students to respond to it.

Changes began. They included going to a seven-period day, using cooperative learning in classrooms, having dances after school, starting intramural sports teams, and focusing on higher order thinking skills.

Today, teachers at Margarita are fully willing to try new things, be creative, approach information in a different manner, and adjust teaching strategies to achieve their goals. "Because we are child-centered rather than content-centered, we are always looking at what we're doing with the kids and at ways to reach them more effectively," says Ms. Hedlund.

Strong District Support

Temecula Valley Unified School District is committed to educational excellence and has been very supportive of Margarita's reform efforts. Each year, the superintendent uses a symbol to promote a shared district vision of what a school should be. This year it is a diamond: a school focused on students and learning is a precious gem. After analyzing and adjusting district goals during a three-day retreat in August, principals open their schools with a sense of connectedness and teamwork. Principals align their school goals with the district's. At Margarita, teachers' evaluation goals are written in concert with both.

Focusing on Active Learning

One program Margarita has adopted is Higher Order Thinking Skills (HOTS), a small but important separate curriculum that originated with the school improvement plan (SIP) committee three years ago. "The committee wanted all Margarita students exposed to higher order thinking skill so a 'special' class was formed," explained one teacher. All students attended two days a week in the last period before lunch. Every teacher in the school taught HOTS for two weeks (four lessons), then students transferred to another teacher. This way, no one teacher had to create a year's worth of lessons. Since the math teachers developed most of the lessons, the emphasis was on math. Lessons often drew from MENSA activities, incorporated geometric drawing, and used group problem-solving techniques.

HOTS has since moved to an earlier time slot. Shortly after the class had gotten underway, an advisory period of 25 minutes was implemented first thing each morning. But when the staff decided they didn't need advisory every morning, they decided to do reading on Mondays, HOTS on Tuesdays and Wednesdays, and advisory on Thursdays and Fridays. HOTS's focus has changed too, with math no longer so dominant. Most of the teachers now design their own lessons. As a staff, they have decided on four criteria for any HOTS lesson: it must stimulate thinking in the top three levels of Bloom's cognitive domain (i.e., it should be a challenge); it should use group processing as much as possible; it should not be attached to grades; and — importantly — it must be fun.

Students still rotate every two weeks to a new teacher — including the assistant principal and principal. Every student in the school spends two weeks with every teacher and administrator. "We get to know every student, and they get to know us," said one teacher, who likes the caring environment this helps promote. Teachers particularly appreciate the involvement of the two administrators. "They do it as well as advocate it," said one. Another added, "Because they are doing it, we can talk to them about what works and what doesn't. They understand." (For the other three days per week of advisory, students stay with the same teacher for all three years of their stay at Margarita.)

Teachers feel positive about Margarita's HOTS program. They believe it succeeds in part because of the way it was designed, but also because of the way it was presented. Too often, teachers say, they are hit with amorphous concepts that "need to be done." With little explanation or help, they're expected to include these things in their curriculum. HOTS, by contrast, was a "hands on" project that started slowly. Teachers received assistance preparing lessons. "Actually," said one teacher, "we've now begun including it in our regular classes. It's really taught me how to teach critical thinking. I wouldn't have had a clue if we hadn't done it the way we did."

Student Reactions to HOTS

Students, too, like the program. One said he now applies his new problem solving skills to real-life situations. "Mostly, I've learned that I can solve problems, and that I'm pretty good at it." Another's reaction capsulized the purpose of HOTS: "It's to make us learn how to think. I know I didn't think as much or as creatively before. It has helped me a lot in pre-algebra because I see problems and how to solve them faster. It has helped me get better mental pictures and even a 'feel' for things in my art class."

"I didn't think as much or as creatively before. [HOTS] has helped me a lot in pre-algebra because I see problems and how to solve them faster."

—Margarita student

Others reported gaining insights about their peers and themselves, discovering new levels of thought, gaining new perspectives, and getting a jump-start on the day: "Other students have great ideas that I can use. And when I see them going through some of the same frustrations I have solving something, I'm more willing to try." "You have to think. It's not just rote, something you do without putting your brain into gear." "I seem to think

faster and connect things together easier. I also see things differently. When I'm reading a story, I know why something is happening." "I wish we had HOTS every day. I have some really hard classes, and HOTS gets my engine running. It teases my brain out of sleep. I get so much more done in my Spanish class, which I have next, on these two days."

Favorite HOTS activities include Pascal's Triangle, tannengrams, cubes, protractor exercises, making puzzles into shapes, designing future equipment, using computers, estimating the numbers of life savers of different colors in rolls of Life Savers, mazes, pentominoes, lines with stars, mnemonics, putting a grocery list into categories, triangles, numbers that add up, and breaking codes.

A Sixth Grade HOTS Lesson (two days)

Day 1: The students enter the room and take their seats in rows. The teacher has two students pass out photocopied materials to the class and announces, "We're going to do a pentominoes activity." She refers to a sheet of paper showing a rectangle divided into 60 squares: "Identify each of the sets of five heavily shaded boxes on this sheet," she says. "Determine which sets can be folded to form a four-sided box with a bottom and no top, and which can't." After several student questions, she distributes a second handout. "Recreate the shapes you have identified onto this second sheet under the column that indicates whether they can or cannot be folded to form a box with no top," she says. "Quickly estimate, before you begin, how many you think will work and how many you think won't, and put your answer in the space provided at the top of the page." Students again ask questions, then begin to work — some in pairs, some independently. The teacher passes out colored pencils and monitors student progress by walking around the classroom. This continues until the bell rings.

Day 2: The students enter the classroom and continue the pentominoes exercise from the previous day. Midway through the class the teacher interrupts: "Now, is there a generalization, or generalizations, that you can make about these shapes and why some of them don't work?" Several hands go up. The student called on says, "It works when there is a box on top and one on the bottom with three in the middle. Then you can fold it into a pentomino." Students immediately begin going over their papers again and the noise level in the classroom rises. The teacher allows them to continue working to the end of the period.

Other Programs

Besides HOTS, Margarita has adopted numerous other new practices over the past two years. One of the most evident is the use of affirmations. Posters in classrooms and corridors carry messages aimed at bolstering self-esteem: "No one can make you inferior without your consent"; "People who matter are most aware that everyone else does too"; "It's nice to be important, but it's more important to be nice." Others foster success: "Be the best you can be"; "Nothing in life succeeds like success"; "Self-confidence: feeling skillful, feeling appreciated, feeling responsible"; and "It is better to solve one problem six ways than to solve six problems one way."

Many teachers now use a "put down, put up" program. If a student puts another down in some manner, he or she owes that student three "put ups" or three statements — actions indicating positive things they have noticed about that person.

Teachers have implemented lots of cooperative learning activities. "Over three-quarters of my staff qualify as experts in cooperative learning," says Ms. Hedlund. "Many of them have been formally trained, and they use cooperative learning activities frequently." Teachers feel that cooperative strategies, which help students learn to solve problems together, are an excellent complement to the HOTS emphasis. As one said, "The two go hand in hand."

Teachers believe in experiential activities and use students to help other students. "In general," one teacher stated, "there is much more student choice in learning." Teachers share materials with

one another and tie learning in one area to another. Several packaged programs have served as major resources at the school, including Explore, Aims, Quest, Skills for Adolescents, and Project Impact.

A Bit of Magic

The principal relies on state, district, and school mission statements and goals to keep Margarita on track. "You've got to have some direction, and you've got to have it written down — 'This is what we've said we believe in' — so that you can always refer to it if you need to," she says.

She sees the principal's role as critical in the process of change. She has clearly delineated her expectations, couched them in two easily understood statements, created school goals that reflect those statements and aligned them with district and state goals. But, she says, "having a vision is not enough. You have to be a cheerleader and be out there all the time pushing it." So she also visits classrooms frequently, makes sure she is in the quad area during breaks and lunchtime, and teaches one of the advisory classes.

The school now has an environment where staff talk with one another regularly about student learning and what it means in the classroom. Modeling and training are provided to help teachers become familiar with and use new skills — and Margarita's teachers take advantage of it. Says the principal, "I can honestly say that staff members on this campus give more. When the district offers something, 95 percent of my staff will be there."

As teachers have grown more sophisticated, they've seen how much more is possible and are eager to try new things. "Around our school it's always, 'We can do that,'" said one teacher. Though they sometimes have second thoughts about rash optimism, their determination and confidence break down obstacles. "If it's making the students successful or improving curriculum, we do it." Best of all, their classroom approaches help communicate this "can do" attitude to students. "There is a little bit of magic here," said one teacher. "The students have been rewarded and so have the teachers. We all feel a sense of success and accomplishment."

Building Bridges: Df Anza Middle School (Ventura)

DeAnza Middle School is located in the northeast "older" section of Ventura in an industrial area. Oil derricks are abundant, and most residents of the two communities from which DeAnza draws earn low incomes. Sixty percent of the school's students qualify for free/reduced lunch service, one-third are Chapter 1, and the school maintains two bilingual classrooms. Thirty-six percent of DeAnza's 720 students are Hispanic, 61 percent Caucasian, 2 percent Black, and 1 percent Vietnamese/Cambodian. The school is a sprawling series of corridor-style buildings forming a "U" around an open courtyard. Five years ago, students were scoring in the fifth percentile on statewide assessments; this year they're at the 85th.

Dates of Visit: February 2, 3, 1990. Principal: Lorraine Becker.

Bridges to the Curriculum

To the principal and staff at DeAnza, active learning is central: it is *the* way they engage students in curriculum. Their shared view is that active learning is a process of building bridges: to connect experience with learning, to create meaning for information (a rich base of "whys" and "hows"), and to encourage a mixture of participation and thinking. These bridges in place, students are able to maximize learning opportunities. One teacher explains that she and her colleagues feel the approach allows them to emphasize student learning "away from the traditional model" — which they feel is critical. Without active learning, she says, "students would be performing at lower achievement levels, have lower self-esteem, and have far less interest in coming to school."

How Active Learning Came About

Ms. Becker, the principal, is responsible for the emphasis on active learning. When she arrived at the school, she found a lot of "cliquish" behavior. "Students stayed within their defined groups. They didn't cross into someone else's territory. As a result, there were problems, and achievement was not high." For example, she says, in some cliques it was not cool to be a good student. She suspected that a change in the mode of teaching might create a different, more positive learning environment. She began suggesting that teachers try active learning, in hopes that they would find the approach as effective as she has.

Years ago when Ms. Becker was student teaching, her master teacher modeled active learning, instilling principles she has used ever since. "She did so much more than just follow text with readings and worksheets. In fact, we had no text, so she involved me in developing numerous projects as vehicles for teaching students the information." Having tried this project-orientation, Ms. Becker found it difficult to teach any other way. "With additional experience in the classroom, I learned a lot more about how to connect students with content. I learned to use what works, and activity-based instruction works. Besides, teaching this way is a lot more fun."

At DeAnza, Ms. Becker began advocating that teachers teach in a way that involves students intellectually and physically in what they're learning. Teachers, she said, should encourage students to apply ideas to problems, take responsibility for organizing and completing assignments, and take intellectual risks.

In order to accomplish these student-centered tasks, teachers have been shifting from a "direct instruction" approach to one where students are frequently in small groups. This gives

every child a chance to participate and express his or her opinion. Teachers are also asking students questions that provoke thinking, making student projects a central part of the curriculum, and — most important — striving to make learning fun.

Teachers at DeAnza, in short, are training their students how to learn. "It's not unusual to see students writing in margins on photocopied materials or using different colored marker pens to highlight important information," said Ms. Becker.

Higher order thinking skills are heavily stressed. An example: each classroom has a poster of Bloom's taxonomy. Students are taught the difference between *synthesis* and *evaluation* as well as the key verb stems for each of Bloom's cognitive categories so they can recognize at which level they are working. "We frequently ask students what level a particular task might require and how they could expand it to a higher thinking level," says one of the veteran teachers. "This way the students train themselves to select challenging individual projects. They also recognize why we are asking them to do certain things certain ways, why we teach the way we do." The principal added, "It gives students permission to take intellectual risks."

Providing Teacher Support

DeAnza, said Ms. Becker with a smile, is known around the district as "home of the inservice" because of its large number of trainings and workshops. She feels that the trainings are important because they provide teachers with necessary and useful information as well as strong support: "Having training available sends a message to my staff that I value what they're doing in the classroom. I'm willing to provide the resources they need."

Last year, as the result of one such inservice, teachers began teaching their students about the various learning modalities: kinesthetic, visual, and auditory. Though the teachers try to include all three as much as possible, they also want students to be responsible for getting the information in the way they personally need it. Said one teacher: "It's not unusual for a student to stop one of us and ask for an explanation in another way, visually, or whatever." One first-year teacher added, "We try to say everything, show everything, and let the students manipulate as much as possible."

Besides inservice, other resources the principal provides for her teachers include 12 to 13 substitute teacher days per year (one or two per month) budgeted for each teacher to give them the time to share ideas, talk about what they are doing, and observe one another's classrooms. "Every teacher has observed at least one other teacher on staff," said Ms. Becker. "I also encourage teachers to team with one another whenever possible. Team teaching helps spark active learning and vice-versa."

DeAnza is known around the district as "home of the inservice" because of its large number of trainings and workshops.

The principal herself is in classrooms a lot — "not to 'catch' teachers but to enhance teaching," she explains. "The teachers are so used to seeing me in their classrooms that they often aren't even aware I'm there." Besides observing, she demonstrates lessons, helps teachers plan and deliver lessons, and suggests lesson ideas. She frequently takes over a classroom so a teacher so can visit a colleague, do some additional planning, or prepare materials. And she does a lot of team teaching with teachers.

"I can't help but be involved in what's going on in the classrooms. It's a big part of me and something that I think I can 'bring to the party,' so to speak. I'm the master teacher here, and I have to take the risk. I need to be out there doing what I am advocating." She believes her involvement has given her much credibility with the staff. "It has also kept me fresh. And teachers know I'm cognizant of what they go through every day with kids."

But perhaps the most important support Ms. Becker provides is her expectation that active learning will take place in classrooms. "I hold teachers accountable. And I make what teachers are doing in their classrooms public." She involves the school in various fairs, etc., which require display of student work. "The Program Quality Review process

we recently went through was a good demonstration of a means to an end. Some teachers who had not been particularly prolific in displaying student work suddenly were posting work on their boards." To ensure that teachers can meet her expectations, Ms. Becker provides necessary materials and supplies. She has purchased an overhead projector for every classroom, she makes lots of colored paper available, teachers have butcher paper and marker pens, and she purchases many special materials by request.

Active learning strategies help kids "solve problems in coordination with each other, express ideas fully, and develop friendships and social connections."

— De Anza teacher

She also feels that recent staff turnover has been a plus for active learning. "I have hired almost every teacher in this school, all with the understanding that they will teach using active learning. It's a prerequisite for a job here." New teachers attend a two-day workshop with Ms. Becker prior to teaching at DeAnza. There they see concrete examples and demonstrations of active learning as well as practice using the approach. The principal thereafter meets with new teachers monthly and in the interim spends a lot of time in their classrooms.

Can't Be Done Every Day

It's important to note that the principal does not expect all teaching to be in the active learning mode. "This isn't something that can be done in every lesson, every class, all the time," says Ms. Becker. "Active learning lessons take a lot of preparation, a lot of coordination. Sometimes the kids need some basic information that can't be delivered any other way than through direct instruction. I'm looking for a blend. I want teachers to take risks and try new things. But not all the time."

Sometimes, she says, class dynamics on a given day call for abandoning plans for active learning lessons. One teacher offered an example: "I may have an active learning lesson all prepared. But I walk into the classroom and I can tell it's not going to work. Maybe it's a rainy day, or maybe it's Monday after a long weekend. The kids are antsy, so I shift gears and haul out the reading books and give them a quiet activity to settle them down." Active learning on such days, she feels, would only lead to non-productive behavior.

How Teachers Respond

For the most part, teachers appreciate how supportive the principal has been of their efforts to make active learning work. One teacher described how differently she now teaches: "I used to have a 'still classroom' mindset. I thought good instruction meant students working quietly, by themselves. Now my classes are filled with busy learners producing an abundance of work!" Another teacher said that the principal's efforts have produced "a staff that is not stagnant. We're all growing professionally, with a lot of openness and acceptance of each other." Students, she says, have benefited in the same way: "Because of active learning, they are open to and accepting of each other and adults, and they have an appreciation of others that I didn't see before."

For one teacher, the shift to active learning was "scary" because it meant giving up control. Even so, she found that it complemented the way she likes to teach: "I like being the 'guide on the side,' rather than the 'sage on the stage', to quote Roger Taylor." With active learning, she had to structure tasks so that they were both very organized and highly flexible. "I literally had to train my students to function in a different way." Her reward is that "students like my class, they learn more, and I am able to give them a lot of freedom — which they understand means 'freedom with a purpose.'"

A new teacher describes her experience with active learning as an extension of her training at Seeds Elementary School, UCLA, where teachers are trained in a lab school setting using a variety of teaching methods, including the Madeline Hunter model. "I had already been trained in positive reinforcement techniques, classroom management, higher order thinking skills, etc., so teaching at

DeAnza was an opportunity for me to apply what I had been trained to do." She has three major objectives that guide her each day: achievement of her learning goal for her students, which she writes on the board; making sure that students understand the reason they're learning certain things or doing certain assignments; and encouraging students to constantly question why have they reached certain conclusions and to justify their findings. On a recent day she gave students butcher paper during a lesson, and immediately they filled it with their opinions about the assigned topic. "Then, on their own, they wrote down why they thought that way — because they knew I'd ask."

For this teacher, being at DeAnza and using active learning is the "best thing I could have hoped for in a job." The work is hard, she admits — "the principal demands a lot" — and at times her commitment wavers. "But only for a minute. I guess I'm neurotic, but I really do love it. It makes me work but, more importantly, grow."

Others agreed that the workload is heavy. Said one: "A lot of teachers leave here. They can go to a new school and not work as hard. A lot is asked of our staff. And it's hard getting kids to learn to do things differently." (The principal confirms that 13 new staff members were hired this year. "Not all the attrition is due to what I demand," she notes. "But it is why several teachers chose to leave.") Like most of her colleagues, this teacher thinks the extra effort is worth it. She sees that the kids now solve problems in coordination with each other, express ideas fully, and develop friendships and social connections. She believes that active learning strategies help students learn more and be more creative. "Kids always give me something I don't expect when I do active learning. I am constantly surprised."

What Variety!

Unanimously, DeAnza teachers feel that active learning allows more teacher creativity. With no one model, they said, each is continually enhancing activities or inventing new ones. The following portrayals of various class sessions illustrate different teachers' active learning lessons.

Language Arts - Sixth Grade

Twenty-six students, sitting in pairs (two desks turned face-to-face), are instructed by the teacher to take out a piece of paper. On the overhead projector she shows a woman's face. She explains to the students, "This is a face of feeling. How would you describe the feeling that you see in this picture?" Students offer various comments, including "happy," "excited," "eager," and "pleased." She shows two additional faces, solicits responses, and compliments each student on his or her contribution.

She then explains an upcoming activity and puts directions for it on the overhead. First, the students are to cut out five faces that show feelings. Second, they are to name the feelings each face shows and tell what they think is causing it. Third, they are to write a short story involving two of the faces. They can use conversation, action, and/or description to help the reader understand the story. As a bonus, the teacher asks them to explain whether they think the mouth or the eyes are more expressive in pictures.

The teacher and the aide pass out stacks of magazines to each pair of students. There is much noise as students leaf through and select pictures. They work together, passing pictures back and forth, but each is accountable for handing in one completed assignment.

As the students work, the teacher moves around the room, stopping at various desks. At one, she notices a student has labeled her picture "happy." "Happy" is used all the time, she says. "What are some other synonyms?" The student's partner responds, "joyful." The teacher agrees. The partners suggest several other words, with the teacher voicing approval. She then directs them to the thesaurus.

A short time later, the teacher rings a small bell at her desk. "You have one minute left,

then you need to begin writing." Students accelerate their magazine cutting and begin writing.

Math - Seventh Grade

Fourteen students enter the classroom and take their seats in rows. The instructor tells them to take out a piece of paper and "prepare for our first investigation." He puts a chart on the overhead listing objects in the left-hand column, including dominoes, staples, cards, index cards, eraser, "Play Search" (a math game), gum, chalk, caramel, and tape. Across the top of the chart are column headings, including estimated mass (g), actual mass, difference, ratio of difference to actual, and percent error. At the bottom is a place for each column's average. The teacher has the students quickly copy the chart. He monitors their work, commenting "good work" and "nicely done."

When students have finished, the teacher says, "We are going to be using what we know about mathematics to answer the questions." He holds up each of the 10 items and displays them on the chalk ledge of the side blackboard. "Which objects do you think are the lightest?" he asks. Many hands go up, and he calls on three: "The eraser" "the gum" "the caramel." Students then vote, and the most common opinion is that the caramel is the lightest item shown.

The teacher repeats the process and determines that students think the staples are the heaviest item. He holds up a one-gram weight and passes it around for students to feel. He then tells students to take out their charts and estimate in the first column how much they think each item will weigh in grams. When they're done, he asks them to share their answers. He puts the highest and lowest estimates for each object on the board.

Now, he says, they will weigh each item and fill in the second column of their chart. He puts the students into groups of three, rearranging the desks to do so (students are familiar with this process and move their desks with no hesitation about where each should be in the rearrangement). The teacher now sets out several baskets, each containing all 10 items. Scales and weights are at the back of the room in plastic boxes. One student from each group goes up front for a basket; one goes to the back for weights and scale. Students have 15 minutes to weigh each item and fill in their charts. Baskets and boxes are returned, students are instructed to finish their computations at home, and class is dismissed.

Gate English - Seventh/Eighth Combination

Thirty-five students enter the room and take their seats. Desks are arranged in nine groups of four, with two desks facing the other two in each group. In the center of each is a set of four readings for today's activity, numbered for each student — one, two, three, or four. (Students already know which number they are). The teacher announces, "Our goal for today centers around learning everything you need to know about the Articles of Confederation." She instructs the students to read their handout and write down five key ideas it expresses. Students immediately begin, and the teacher monitors understanding of the task and progress. She then goes to the front of the room and tapes two large pieces of butcher paper on the board.

Calling the students to attention, the teacher labels the papers on the board "+" and "–." She tells the students not to think about the Articles of Confederation as "good" or "bad," but in terms of what worked about them and what didn't. Students grasp the idea quickly and begin offering suggestions. The teacher lists the following:

Positives	Negatives
Gave colonies power to vote	Land west of Appalachians
Forbade states from negotiating power with other governments	Fed'l Govt — not much power
States had most power	Couldn't find a way to pay for the war
	Couldn't tax

A discussion of each item follows, with most students paying attention and contributing to the discussion.

World Geography/
English - Seventh Grade

Twenty-four students enter the room, read the assignment on the blackboard, and take their seats. Instructions are to:

1. Quietly review the Plato reading.
2. Find *at least* one word that challenges you while reading.
3. Be prepared to share.
4. If you were absent yesterday, take a reading.

The seats are arranged in six groups of five or six desks, and students know to which group they belong. They were given copies of the Plato article yesterday and told to read them at home last night. Copies are stacked on one of the desks in each group for those who were absent. Students take out their articles and begin reading. As they read, each student uses one or more marker pens. They highlight key words and passages in one color, unfamiliar vocabulary words in another.

The teacher stops them and asks them to raise their hands for any words they don't understand. Different students ask about "lodgement," "imperceptibly," "law abiding," "predecessor." For each, the teacher either refers the student to the word's context, breaks the word into smaller pieces, or simply defines it. For example, for "law abiding" the teacher says, "Do you know what 'abiding' means?" The student says no. "Abiding means following the rules. So what would 'law abiding' mean?" The student replies, "Following the rules of law." "Good," says the teacher. As teacher and students go through the vocabulary words, students are writing the definitions in the margins of their articles.

The teacher now asks: "When you were reading this last night, did any of you look at a dictionary and try to figure out some of these words? That's what I do. I end up with definitions written all over my paper. That's what you have to do with something like this." A student raises her hand and asks, "What is 'guise'?" The teacher responds, "'Guise' is an outward appearance of something. Are you familiar with 'disguise'? Something that's covering up your real appearance? Guise is the outward appearance — the guise of music, the guise of a pastime. What does this guise look like?" Another student answers, "It's legislation." The teacher agrees and continues this questioning until all the unknown vocabulary words have been discussed.

The teacher then curtails the vocabulary discussion. "As we go along, I'll fill in any other definitions for words. But let's start getting the main ideas. How many of you feel overwhelmed right now?" A few hands go up, and the teacher comments, "I see a few honest hands. This is tough. You have to dig in and really struggle with it to understand what the main ideas are. I had originally planned for you to brainstorm and toss out the main ideas you found in your reading. How many of you feel com-

fortable right now doing this? Or would you rather go through and read it together? That won't be quite as exciting, but we can definitely do that." The students vote to brainstorm.

The teacher tells them that they will begin with one idea then change plans if necessary. She says, "I took this article out of a book I read in college." She jokes about being "that mean teacher who makes you read college stuff." Students laugh. "Okay now, what do you think one of the main points of the reading was? If you say something completely off the wall, it's okay. We might laugh a little bit, but it's okay. I'm looking for some thinking here. You might disagree with some of the opinions, but that will help us get to Plato's main ideas."

Through a process of discussion, the students arrive at the following main ideas which the teacher outlines on butcher paper taped on the front wall:

- The teacher must instill rules/respect for law and behavior.
- Can't legislate rules of behavior (i.e., giving your chair to an older person).
- Proper education creates awe, honor for law.
- Fashion is trendy, novel.
- Music causes problems in society; it challenges conventions and causes lawlessness.
- Guardians must watch over your music (teachers).

The students reach consensus that "new" or "novel" music causes problems, according to the reading. The teacher says, "What kind of problems will the new music cause if you're allowed to listen to it? How is novel music going to affect you?" A student replies, "The new music is going to make you want to change the rules. If it's new, it's going to change the way you dance to it. People aren't going to like the change." The teacher says, "Great! What you have just done is give a perfect definition of one of the words: 'convention.'" She rereads the section about music endangering the moral fabric of society and upsetting established conventions. She emphasizes this as a major idea of the reading.

The teacher now passes out butcher paper to each group. She explains that a main idea is printed at the top of each paper. "Your job," she says, "is to determine if you agree or disagree with the statement. Then you are to explain why." The main ideas are as follows:

- New music endangers society and encourages lawlessness.
- Children's music must be strictly regulated by adults and/or educators.
- The purpose of music is to help children learn how to respect laws and behave appropriately.
- Educators determine how children will respect rules of behavior and laws of the state.

The students excitedly begin work. There is much talking in each group. By the end of class most of the papers are completely filled, and the teacher tapes them on the back windows. She dismisses the students, indicating they will talk about their work tomorrow (see attachment for a complete lesson plan).

Student Responses

Interviews with eight randomly selected students revealed a positive feeling about instruction at DeAnza. Students particularly expressed enthusiasm about working with each other, having opportunities to be creative, developing projects, and sharing ideas. One said he liked the way his teacher always teaches one "main" way to solve a math

problem: "He teaches us the easiest way, but then gives us options and tells us to use the way that works best for us. He says, 'You might think better this way.' I like that."

Another student talked about working on a "risk-taker" project in history right now. "We have a whole variety of topics. We pick what we want to work on, then we get a whole packet of things that we can use to get information about that topic. At the end, we either have to do a presentation or turn in a report."

Another pointed out the emphasis placed on "learning how to learn." "We took a test to see how we learn. It really helped me. I'm a visual learner. The test helped me see that. I know now why it's hard for me when teachers just explain things. I have to see it to learn it." Another said he had improved his ability to take notes in class. "I study a lot better now. I use note cards and make sure I write a lot. I'm a kinesthetic learner and I need to be using my hands all the time."

Looking to the Future

Most teachers are using active learning regularly in their classes. They report a dramatic turn for the better among students, both academically and behaviorally, and believe it is due to this important bridge they've built between their middle school students and the curriculum. As one teacher noted: "Middle school is a special age; it takes a special way of teaching."

Besides the vast improvement in student achievement, absenteeism has decreased. Few cliques are in evidence. Students are taking a greater interest in student activities. Now the principal and staff are looking ahead, planning to focus next on interdisciplinary instruction. "I think it makes sense for that to be the next item on the table for us," says Ms. Becker. "There is so much teaming already going on around here. The staff's decision about what is next is closely connected to the school's culture. I think we're ready."

De Anza: Attachment
World Geography/English Lesson Plan

Lesson: Plato's Views of Education

Materials: Poster paper
Markers (six)
Plato reading

Message on Board:

1. Quietly read the Plato reading.

2. Find at least one word that challenged you while reading last night.

3. Be ready to share.

Objective: After reading a passage for *The Republic of Plato*, the learner will identify six main ideas. In groups of five, students will discuss one of the main ideas and decide whether they agree or disagree with Plato's opinion.

(Objective is also written on the board for students.)

Anticipatory Set:

1. Students share challenging words.

2. Define words in context of the passage.

Input:

1. Today we are going to focus on some of Plato's opinions about the role of education in society. When you read Plato you must realize that all of his writings were basically concerned with discovering how society could be "fixed" so that man could realize the best that is in him. Plato had ideas about every aspect of society, but today we are going to focus on the role of musical education.

2. During the second half of the class you will the opportunity to share whether you agree or disagree with Plato. First, we need to understand the main ideas he was trying to communicate.

3. Map the reading. Highlight five major points:

    a. Novel music endangers society and encourages lawlessness.
        i. Music seems harmless, but it corrupts manners, laws, and how people deal with each other.
    b. The music children listen to must be regulated strictly by educators — or guardians.
    c. Purpose of musical education:
        i. instill a spirit of order — i.e. following laws respectfully.
        ii. result: children will follow proper rules of behavior which have been forgotten.
    d. Laws concerning rules of behavior — like giving a chair to an elder — cannot be legislated.
    e. Education determines how much children will respect laws of behavior and state.

4. Questions?

5. Now you will have an opportunity to decide whether you agree or disagree with Plato's ideas. Listen carefully to your directions:

    a. Each group leader will receive a poster with one of the main points written at the top. You'll also receive a marker.
    b. Read the heading.
    c. This is the idea your group will focus on.
    d. Using specific examples from your life to support your opinion, discuss whether you agree or disagree with Plato's point. Do this for about four minutes.
    e. After you have had your discussion, choose one person to record its main points. Include whether you agree or disagree, as well as reasons for your opinion. Do this for about five minutes.

6. Determine a reporter and groups share their "opinions posters."

We Are Unique: Hewes Middle School (Orange County)

Hewes Middle School is in the northern portion of Tustin in an affluent neighborhood bordering Santa Ana. Approximately 765 sixth, seventh, and eighth graders attend, primarily Caucasian, but also 10 percent Asian with a handful of blacks and Hispanics. Several Taiwanese students enrolled this year for the first time. Parents have high academic expectations for their children, and achievement scores are generally high. Most Hewes students tend to be very success-oriented; a high percentage are college-bound. Hewes has been named a Middle Grades Partnership School.

Dates of Visit: March 5-6, 1990. Principal: Julie Hume.

Unexpected Participants

"Our philosophy," says Ms. Hume, the principal, "is that we are a middle school and we are unique. Whatever we can do to address the uniqueness of middle school students, we do." Drawing from middle school literature, including *Caught in the Middle*, staff are alert to their students' developmental characteristics, such as body-growth spurts, restless energy, high social emphasis, need for strong self-concept messages, and a desire for talking and interaction. Teachers, administrators and other school personnel agree that the approach they've found most effective in meeting the special needs of this age group is active learning. "Quite literally," said one teacher, "it means 'doing it.' It requires action on the part of the student. And this is what our students need."

But when Hewes first began using active learning strategies, the staff quickly learned that they'd neglected to involve some crucial allies: parents. When students talked at home about working in groups to create Roman newspapers and design mythical communities, parents weren't sure whether to be concerned or excited. "This was something totally new for most of us," said one mother. "Things were being taught in new ways, with new expectations, and we didn't understand it." When she and others began questioning administrators and teachers, Ms. Hume didn't see a problem but an opportunity. She considered such parent interest one more aspect of Hewes's uniqueness. Her response was to start a series of demonstration lessons for parents.

Several times each year now, teachers hold classes that allow parents to experience first-hand what active learning is all about. They learn principles that Ms. Hume long practiced in Gifted and Talented Education programs — the background that prompted her to encourage this approach at Hewes. "The premise is that we, as teachers, have to do more than input information into students and have them regurgitate it," she explains. "They need to be trained to think." A sign parents can see in her office reinforces the message:

> Tell a child *what* to think and you make him a slave to your knowledge.
> Teach him *how* to think and you make all knowledge his slave.
>
> Henry A. Taitt, 1982

Ms. Hume strongly believes not only that every student needs to think, but that every child is capable of thinking. "The way that gets translated into the classroom is through what I call 'engaged learning,'" she says. "By engaging the students in the process of learning, you help them develop skills that go way beyond being a receptacle of information and facts. They learn how to use facts to solve problems, work with others, create new solutions, and feel successful in their accomplishments."

It Takes a Lot of Support

She provides lots of support and resources to the staff so they are equipped to use active learning techniques. Teachers are encouraged to attend workshops, in-service trainings, and even visit other schools if they feel it will make a difference in their teaching. But Ms. Hume is careful to let teachers decide for themselves which of these opportunities to take advantage of. "I used to be really pushy," she recalls. "Now I'm much less directive, letting teachers tell me what they need to increase their effectiveness in the classroom. Not all teachers have chosen to participate, and that's okay. There are a few who just don't want to do things differently."

"Now everything is more 'in-depth,' with a flavor you don't get from books."

— Hewes student

For those who do, much staff development is also provided. "The overriding theme for all staff development activities is how best to understand the needs of middle school students and teach to meet those needs." Activities have promoted teaching of higher-order thinking skills (HOTS); using activity-based learning; putting students into cooperative learning groups; and using peer coaching to improve teaching skills. Teachers have learned how to use the Meyers-Briggs assessment, deal with diversity, and keep stress at a minimum. "These have been very important pieces in the bigger picture," says Ms. Hume. "I am committed to having my staff teach so that all students are engaged."

Several half-day sessions also offer teachers the chance to work with each other, either as an entire staff or in small groups. "Just like the students, teachers need opportunities to experience being engaged. How can I expect teachers to advocate something they haven't experienced?"

The principal is a strong role model. "She models active learning in practically everything she does," said one teacher. "She uses name tags in meetings so we know who people are. She puts us into groups. She involves us in planning, doing, writing — you name it." She also brings them into most phases of school management. "I believe in participatory management," Ms. Hume says. "It does create a lot of frustration. Teachers say, 'Just make a decision! You do it!' But then it's mine. I want it to be theirs."

She tells a story to illustrate why she so strongly advocates active learning. At a recent active learning workshop she conducted at another middle school, a teacher asked, "How can I be expected to teach when all I get are a bunch of zeros or students who can't speak much English? I can't teach them anything." Ms. Hume responded by telling of another workshop she'd once attended. "The teacher began the lesson speaking Japanese. She continued for about 10 minutes, and I was completely lost. Then she told us in English that this was the way most limited-English-speaking students experienced being taught English. 'Now,' she said, 'let's see the same lesson done differently, using a different approach, still in Japanese.' She taught the very same lesson using charades, talking, gesturing, and getting us up out of our chairs and involved. I understood the lesson. I finished, I felt good. I took a little test at the end, in Japanese, and I passed! This crystallized for me the value of engaging students."

Kids Learn by Doing

Most teachers at Hewes attribute their success with active learning to their philosophy that if one experiment doesn't produce the results you expected, scrap it and go on to something else. They are always trying new ways to reach students. They also credit their penchant to share with one another. "We're not selfish," said one teacher. "When we find something that works, we want to tell everyone. Pretty soon the teacher down the hall is doing his own version of the same thing."

Enthusiasm for this approach runs high. "I've been teaching for 19 years now," said one teacher. "A lot comes and goes in that amount of time, but there's one constant: kids learn by doing." For her, active learning may mean pushing the desks to the corners of the room to give students plenty of work space in the middle; asking parents to bring in items for students to use, talk about, and manipu-

late; or allowing students to act out when it's appropriate or needed. "No matter which way the wind blows, the ones who learn are the ones who *do*."

Math 4, Grades 6, 7, 8

Students are sitting in groups of four. The teacher has the overhead projector on and students each have a cup of colored chips. The teacher refers students to the steps for solving equations that are displayed as footprints over the blackboard at the front of the room:

Follow these steps	1. To solve any equation	2. Simplify	
3. Find the variable	4. See what's been done to it	5. Do the opposite (to both sides of the equation)	

Is your answer reasonable?

At the top of the overhead, the teacher writes the following equation:

$$X + 4 = 6$$

Directly below it, she manipulates six dime-size chips to ilustrate the equation, moving her chips around and removing them as she speaks. Students duplicate her work at their own tables with their chips and agree that the answer is **X = 2**. She then puts up another equation: **X + 5 = 9**. She lets the students tell her how to move her chips to arrive at the answer: **X = 4**.

Now the teacher puts up the equation **X + 3/4 = 7 1/4**. The teacher says, "Now what do we do here? This is not so easy now. We haven't done any fractions so far." Several students let out a groan, while most begin to move their chips around. The teacher comments, "Isn't it amazing how hard it gets with fractions?" She gives the students several minutes to see if they can figure out on their own what to do, then says, "You're working with portions of numbers, instead of whole numbers." Again, she allows time for students to figure out on their own what to do.

The noise level is high as students discuss the problem. The teacher walks around the room stopping at various groups. Then one or two students determine that their chips can represent portions of a whole and begin to solve the equation productively. Others imitate. The teacher calls everyone's attention to the front and demonstrates how to put three chips on one side, 29 on the other. She tells them, "We're not going to do anything different. We're going to take off three-fourths over here and three-fourths over here. What's my answer?" Several students shout out "**X = 6 2/4**." The teacher reminds them to reduce, and they respond, "**X = 6 1/2**." The bell rings, the teacher gives a homework assignment, and students are dismissed.

Sixth Grade Core

Students are sitting in nine groups of four, their desks pushed together to form each group. The teacher passes out previously written student papers and evaluation sheets (see attachment), giving each group the work of another group. Students are familiar with this activity and begin working immediately. Each student has one paper to read and evaluate. Each then passes the papers to the student next to him. At the conclusion of the "read around," students have each read and evaluated all four papers. One student comments, "This activity makes me a better reader and definitely a better writer." Another says, "I like seeing other students' work. It really helps me with my own writing." Most of the class period is over by the time each student has read four papers. The evaluations for each paper are collected and paper-clipped together with the paper, then passed back to the original writer. These papers will be taken home tonight, rewritten using the comments on

tonight, rewritten using the comments on the evaluation sheets, then handed in tomorrow for a teacher grade.

The teacher gets the class's attention by putting her hand up. She indicates that they are to spend five minutes discussing as a group which paper was best and giving two reasons why. Students immediately begin to talk, and in each group one person begins to write.

The teacher again calls the class to attention and asks each group to share. One student from each stands up and reads what the group decided. Reasons mentioned for a student's paper being "the best" include: good descriptions, an emotional twist, an original idea, it's logical, very creative, shows greed, doesn't have any mistakes, we enjoyed it, it showed the outcome of a wish (instead of just talking about it), it was meaningful, and it was a realistic fantasy. Students conclude sharing just as the bell rings, and they are dismissed.

The Consensus is Positive

Parents are pleased with the way teachers are teaching at Hewes. They see their children excited about learning. "My son comes home each day with a lot of enthusiasm. When I ask how his day was, he says, 'Great!' or 'I did very well.' My child is happy at school."

Another parent talked of her child's enthusiasm for some of her class projects. "The students have to come up with their own ideas about what they're going to do. That freedom has made such a difference with my daughter. She feels that she's been given a lot of respect for her ideas. So when she gets an idea, off she goes. I especially love seeing her persist, even when it's a struggle to work out what she's going to do and how she's going to do it." Another parent recalls that her two children were both very frustrated in the beginning. "One was not getting any work done. The other grumbled every day about how she didn't like 'the new way.' But they have worked through all that. Now they get their work done. They accept group grades when they are given. They've learned to always contribute their best. And best of all, I see them excited about what they're learning."

When asked about active learning, students were not confused by the question. They said, "It's hands-on," "getting involved," "working in groups," "going outside" "having your own point of view," or "working on projects." Clearly, they like the approach. Typical comments included: "I have to work more, but I like it more"; "I like to learn what others think about things"; "Now everything is more 'in-depth,' with a flavor you don't get from books. Nothing's just black and white." One student remembered creating an entire civilization with her group members: "It made me feel like I had been there when we finished. 'Our place' was real."

Staff, students, parents, and administrators are all proud to be part of Hewes as it shifts away from the way things have always been done. Said one parent, "We're doing new things to get our students ready for a new world. They're learning to think better, and that's what they'll need to do in the future."

HEWES: ATTACHMENT
EVALUATION SHEET

Title _____ Date _____

Author _____

	YES	NO
Are there three paragraphs?		
Is the first about the setting and lucky charm?		
Does the second give two reasons for the "wish"?		
Does the third tell what might happen?		
Are the words all spelled correctly? (Write any to be checked on the back of this)		
Are all the sentences complete?		
Are there three-to-eight sentences in each paragraph?		

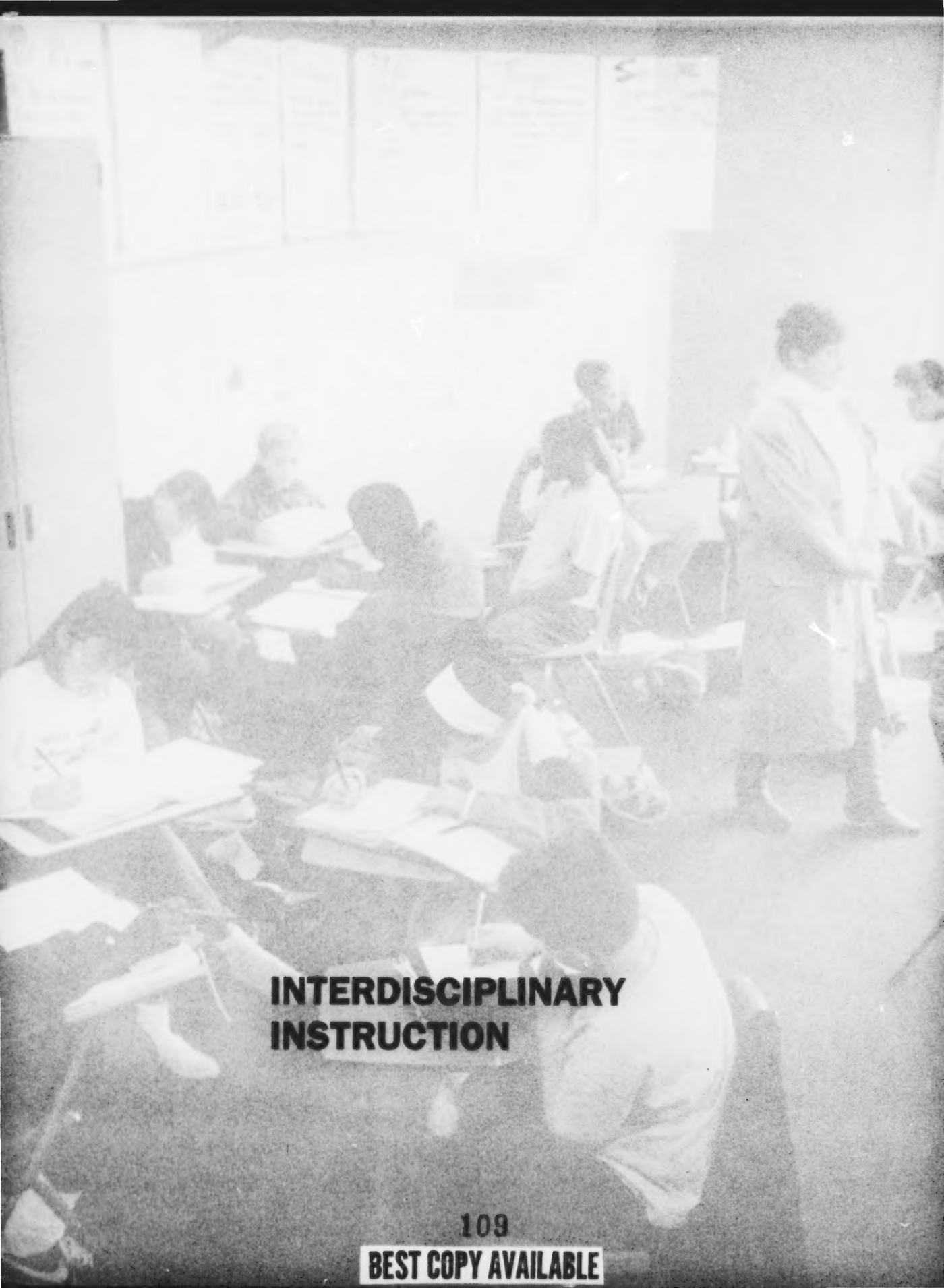
What one change would improve this paper? _____

_____

What is the best part of this paper? _____

_____

Evaluator: _____



INTERDISCIPLINARY INSTRUCTION

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CHAPTER 4

Interdisciplinary Instruction

INTERDISCIPLINARY instruction (IDI) is about breaking down boundaries and increasing relevance. Most educators use the term to describe a way of teaching that demonstrates relationships between two or more disciplines so as to foster student understanding of important problems, issues, or themes. The call for IDI comes from a recognition that students are ill-served when a curriculum totally segregates the traditional disciplines. "On an epistemological level, the primary disadvantage to [discipline based curriculum] is that it does not reflect the reality of life

outside school," says Jacobs (1989, p. 15). "We simply do not function in a world where problems are discipline specific in regimented time blocks."

The middle grades are a kind of crossroads for discipline fragmentation. While the elementary years may prepare students for encountering the disciplines as distinct time blocks, middle schools usually compound the impression of separateness by having students change classrooms and teachers for each subject.

In considering a shift to interdisciplinary teaching, it is important to recognize that IDI can take many forms. Jacobs (1989) describes the following three: 1) a *parallel discipline* approach, where teachers of different disciplines agree to similarly sequence their instruction (e.g., according to a historical chronology) and students, not teachers, must find the relationships across courses; 2) the *complementary discipline* approach, where a unit or course is developed by a small group of teachers, usually from obviously complementary disciplines (e.g., math and science); and 3) the full-blown *interdisciplinary unit or course* in which a curriculum piece is developed by a larger group of teachers representing a wider range of disciplines. Many schools set a goal of having interdisciplinary units that reflect all four major academic subjects (language arts, social studies, science, and math).

All three of these approaches assume some coordination among teachers. Indeed, cross-subject teacher teams are often organized as a first step towards facilitating IDI. It is important not to equate teacher teaming with interdisciplinary instruction, however. The existence of teacher teams is no guarantee that meaningful connections will be made across disciplines. There is evidence, in fact, that teacher teams need to grapple with many issues related to their functioning and identity before they can be "free" to focus on instruction (Plodzik & George, 1989). Some teams may never reach that stage. Others, ready to focus on instruction, may be frustrated by lack of planning time, resources, or appropriate IDI models.

The importance of such models is often overlooked. Teachers, unlikely to have been schooled in IDI, must chart new territory when they want to embark on it. The task of truly comprehending non-trivial connections among disciplines (Ackerman, 1989), selecting themes to highlight these connections, and turning these ideas into a workable curriculum is not to be underestimated.

It is critical, too, to recognize that a sole practitioner can carry out excellent IDI (e.g., a core teacher who independently designs integrated language arts-social studies units). While this is most likely to happen in a school that already encourages teacher interest in interdisciplinary approaches, it can also arise from an individual teacher's unique perspective and talents.

When looking for schools involved with IDI, our primary goal was to find good examples of interdisciplinary curriculum units being taught to students. We anticipated that schools with established interdisciplinary staffing structures would yield the greatest number of units as well as units of highest quality. Thus, most of the cases not only convey examples of IDI, but illustrate how teacher teaming can be the impetus that gets it underway.

Contrasting the Cases

Table 4 contrasts the four IDI cases, both organizationally and instructionally. Close examination of similarities and differences among the schools reveals several important factors that other interested schools or districts might bear in mind:

Observation: At three of the four schools, many teachers are assigned to teams in order to facilitate IDI. At Sparkes, however, the school's small size encouraged staff to consider other approaches. Most Sparkes teachers are assigned to core classes so that individual teachers take responsibility for linking across content. These core teachers have opportunities for collegial support via monthly planning sessions.

- Changing a school's staffing structure to facilitate IDI can affect many areas other than curriculum development. What are some of the implications of setting up teacher teams? Core classes? What staffing structure might make most sense in your situation and why?

Observation: In the four schools, interdisciplinary teaming has evolved slowly with the gradual building of staff commitment. Even in schools where teams are assigned, the professional and interpersonal chemistry among staff may be

Table 4: Comparison of Interdisciplinary Instruction Among the Four Schools

BUCHSER	FORT MILLER	SPARKES	CHAPARRAL
Organizational Attributes			
District mandated pilot team at each of two middle schools	"Accidental" team in particular committed to IDI	Principal mandated teams to support individual teacher's core IDI work	Principal assigned teachers to teams 14 years ago
Principal "assigned" other teams			Principal continues to assign team members and moves them as necessary
Principal committed to IDI	Principal agrees with IDI concept but has other priorities	Principal committed to an elementary model of IDI integration within individual core classes	Principal committed to team concept, has district office support, and publicly espouses idea
Workshops/consultants made available	"Accidental" team (two teachers) attended workshop	One teacher attended workshop	Principal encourages teachers to attend workshops, acts as facilitator, allows teachers to self-direct
District Staff Development Director committed to concept and holds bi-monthly meetings with two middle school pilot teams			Superintendent wants to expand IDI and teachers more responsibility
Planning time provided for pilot teams; principal encourages regular planning by established teams	"Accidental" team (two teachers) has negotiated common prep time for planning	Support teams meet one-half day monthly to generate and discuss IDI ideas; principal provides subs	Teams have common preparation periods for planning; principal is patient, allows time
Instructional Attributes			
Loose, cross-classroom connections (i.e., "lucky links" of content ideas); some fully-developed themes across teams; one school-wide attempt at a theme	"Accidental" team has fully-developed cross-content themes; other teams focuses on discipline and student support	Loose attempts to connect curriculum in core courses by individual teachers; support team meetings help teachers brainstorm ideas	Loose attempts to connect curriculum within teams; cross-subject connections primarily in pairs (e.g. history with language arts)

such that a school begins with only one or two teams, then adds others later. When several teams exist, one or two often emerge as models for the others. This small-scale approach to initiating teaming has been documented statewide (Slater, 1991).

- Whether teaming occurs school-wide or with "trial" teams, it involves risks. For example, a school that begins with one or two teams may risk faculty resentment or increased chance of failure because so few teachers are involved. Such worries may undermine future expansion or cause discomfort for the teams. What other risks exist with trial teaming? With all-school teams? Which of these two approaches would make the most sense in your school and why?

Observation: Teachers in all four schools express frustration about the work environment in which their interdisciplinary instruction is supposed to develop. While they often receive planning time (e.g., weekly or monthly meetings), it is seen as woefully inadequate for the magnitude of the task.

- What kind of scheduling (student and teacher) would allow your school to create common team planning time, even if only for the contracted one-hour preparation period? If the entire school is assigned to teams, how does that complicate scheduling? What else might be done to increase team time together?

Observation: Teachers in the four schools have developed their own interdisciplinary units — all after considerable struggle. Their planning typically involves brainstorming various loosely connected activities that would fit under a broad theme. Some unit components may be based on commercial materials, but most stem from teachers' own ideas and resources. The resulting interdisciplinary units are unique, but most fail to reflect a good understanding of meaningful interdisciplinary relationships.

- With so few commercially developed interdisciplinary units, what can be done to support consistently high quality teacher products? What strategies could help to ensure that units explicitly promote student thinking about the relationships among disciplines? What criteria might you use for interdisciplinary units at your school?

Observation: The four schools' interdisciplinary units share some common content and sequencing characteristics. The most natural content links seem to occur between language arts and social studies. Less frequently, math and science are also incorporated. In most instances, electives are not included. All of the schools have units that can be introduced at varying points throughout the school year as opposed to a set of units that must be taught consecutively.

- What do you think accounts for these commonalities? What might explain the varied, intermittent placement of the units in the curriculum? What are the advantages and challenges of creating units that combine three or four disciplines of varying configurations (e.g., language arts, math, and music)? How could decisions about these unit characteristics be made at your school?

Lucky Links: Buchser Middle School (Santa Clara)

Buchser Middle School in Santa Clara serves approximately 1,300 sixth, seventh, and eighth grade students. Enrollment is down this year, with continued decreases expected over the next few years. Approximately half the students are Caucasian, the other half primarily Hispanic, with some Asians and a few blacks. Families are mostly middle income. Numerous apartment houses mark the area, and many students are bused from outlying regions. Test scores are good, having improved during each of the last two years.

Dates of Visit: February 13-15, 1990 Principal: Don Flohr

Using District and Outside Resources

At this year's third meeting of the combined Peterson and Buchser Middle Schools' "pilot teams," the district's assistant staff development director issued a reassuring directive: "Slow down and do what you can within your extra 20 minutes of preparation time. Try to find those 'lucky links' where you can integrate your curriculum with one another."

You could feel the room's atmosphere change as several teachers sighed in relief and relaxed in their chairs. Still, it was clear much concern remained over the massive amounts of time teachers were spending planning for thematic overlaps in content.

"We're looking at two different issues here," the assistant director continued. "There's 'integrating curriculum' and there's Susan Kovalik." Kovalik, a well-known consultant on interdisciplinary instruction (IDI), has given several workshops at Buchser over the last three years. Now the speaker was pointing out that those who had taken a Kovalik workshop tended to attempt too much too fast. "Instead," she told teachers, "proceed in smaller steps."

"If you have an overriding theme that you're going to try to carry over from math to science to history and so on, it's going to take massive blocks of time to map it out. But if we're talking about simply integrating curriculum as it is, without trying to give it a thematic approach, then smaller segments of time — say, 35 minutes two times a week — should be sufficient to talk about what each of you are doing in your classrooms and find places where you can 'hook up.' We want you to find those 'lucky links' and use them."

Many of the teacher teams at Buchser have been attempting to create overriding themes that they can use to guide their curriculum planning. For example, one of the sixth grade teams decided to use "water" as the theme for the entire year. One seventh grade team chose "patterns," another, "let's get organized." For one week last year the entire teaching staff focused curricula around the theme "grand" — an idea prompted by Susan Kovalik's work.

Because of Buchser's involvement with Kovalik, many teachers have been striving to do far more IDI than the district advocates. Buchser's emphasis on IDI began three years ago. "We started with the idea that implementation would not stifle any teacher's curriculum," said principal Don Flohr. "I wanted teachers to do what was comfortable for them; how much they relate disciplines is up to them." As one teacher who helped pioneer IDI stated, "We wanted it to be voluntary and positive, not negative."

They got underway after one of the teachers attended an interdisciplinary instruction workshop

(not Kovalik's) and was so excited about IDI that colleagues caught her enthusiasm. The principal and a few teachers visited a Phoenix middle school to observe interdisciplinary teaming. Buchser then flew in an expert from Maryland and even arranged for several of the Phoenix teachers to come on-site to talk to the staff.

Teaming Up

Soon several teams formed, and despite some skepticism, most of the teachers expressed interest in teaming. The principal identified two key factors that would contribute to the success of IDI: making sure that all teachers on a team shared the same students and making sure they planned together.

"We wouldn't go back to teaching independently ever again. Sure, this is a lot of work, but it gives my teaching direction . . . and it definitely is better for kids."

— Buchser teacher

In establishing teams, one of Mr. Flohr's objectives was to provide students with a logical progression from the elementary (one-teacher) model to a full-scale departmentalized high school model. As a result, grades seven and eight have increasingly more specialized classes and less time in core groupings. Another objective was ensuring that all teachers in language arts, science, math, and social studies were on teams. "Because of scheduling, I knew it would be impossible to have *all* teachers on a team. I decided to stick with the four core subject areas, since this was where students could best see relationships."

He sent out questionnaires to the core teachers, asking if they preferred to be teamed through a sociogram or on a voluntary basis. They chose the sociogram, which meant the principal had to make some tough choices. One of the hardest was deciding what to do with teachers not totally sold on teaming. "I wanted strong, dynamic teams that could serve as models. Should I put a hesitant teacher in with a strong group, figuring that he or she would be bolstered by the group, or should I put several hesitant teachers together, figuring they would be motivated by the work being done by other teams?" In the end he did both, simply because of the way the numbers worked. He created 11 teams: five sixth grade (each with two or three teachers), two seventh, two eighth, and one combination seventh/eighth (all with four teachers). "The hardest team to establish was the split one: I had to make some concessions to get teachers to mix students like this — like agreeing not to schedule in any 'problem' kids."

Last spring the district staff development director asked for three or four volunteer teachers from each grade level at each of the district's two middle schools to serve as "pilot" teams. The objective was to overlap content, and a prime issue each school had to deal with was finding planning time.

Pilot teams at both schools were given an additional 20 minutes of preparation time to work together — time created by freeing these teachers from the 20-minute, all-school reading time each morning. (Counselors, administrators, or other teachers substituted.) This extra time worked well when it immediately followed teachers' normal preparation period. But for teams who tried to break away for just this 20 minutes, it caused problems. One team finally abandoned it. "By the time we all got together, most of the time was gone. It wasn't productive at all. Plus, we would return to our classes and find that we had to do a lot of settling down and getting students back into 'our' routine. It just wasn't worth it."

At Buchser, where students are dismissed an hour early on Wednesdays, teams are also able to use that time slot. They find it valuable but still not long enough. "Once you start down this road toward IDI," explained the principal, "you need more planning time, not less. Planning time is the benchmark. It's also very expensive." To further create time, many team teachers are advocating a 5-1-1 proposal as a contract negotiation item this spring: teach five periods, prepare one period, and plan in teams one period. Others feel several release days would be a better solution, and the staff development office is promising more of these days.

Mr. Flohr is very supportive of these efforts. "I have planted a seed, the tree has grown, and now the fruit is all over the place. I don't want to see the fruit rotting on the ground. Teachers have got to have more planning time."

A Sixth Grade Team

One sixth grade team has worked out a format for efficiently using the Wednesday planning time. One teacher acts as group leader, keeping minutes/notes in a small blue folder. This responsibility is rotated every two or three months. The three team members share the content being taught to their 90 students. Students have three core time blocks (two hours apiece) that encompass reading/language arts, social studies/math, and Quest/science. PE and exploratory are done in a one-hour block each day.

In addition to the weekly planning sessions, this team meets periodically on Sunday evenings to continue working and planning. Initially, they tried to follow Kovalik's guidelines as they understood them. They selected a theme for the year — "water" — and looked at ways to reorganize their curriculum around it. In each classroom, for example, the bulletin board reflects the theme. One has the caption "Catch a Wave" beneath huge construction paper waves. Each wave is connected by a string to a rhyme or song line having to do with water ("Water, Water, Everywhere"; "Old Man River"; "Row, Row, Row Your Boat"; "London Bridge is Falling Down"; and "Three Coins in a Fountain"). Between the wave and the rhyme, some 10 to 12 mathematical functions or terms are displayed along the string. For example, under "Beach Blanket Bingo" are "graphing," "mean," "median," and "mode." Under "Three Coins in the Fountain" are "decimals," "place values," "integers," and so on.

Each of the teachers has integrated water in a variety of ways, using it as the focus or anticipatory set for instruction. However, as one teacher pointed out, "We haven't gotten to the point where social studies, science, and math can cover the same aspect of water at the same time. We can see our theme in each of our classrooms, but we're having trouble getting it to match up outside of our individual classrooms."

The other teachers agreed. "I really should be approaching history in a mind-map rather than chronological order," said one. "Instead of starting with ancient civilization and working my way up, I should be breaking up my curriculum to better mesh with science — using the great rivers of the world as my launch, for example, and not worrying so much about everything being in chronological order." The team had originally seen history and geography as driving the curriculum, but now agree that science makes more sense. All three agreed that math needed to be made part of language arts, social studies, and science. "All of us should teach math. We don't need a separate math class. So much of it fits right into the curriculum."

Individual Classroom: Common Instructional Approach

All three have been writing their own curriculum, using the texts as resources rather than as the mainstay. They've worked out a common approach to discipline, with the same rules and consequences in each class. "We wanted to make our rooms safe, comfortable places. We try to discipline in a positive, rather than negative manner. We put a positive quote on the board daily. We have positive aphorisms or clichés on our bulletin boards. We each have a potpourri simmer-pot going and play soft classical music in the background. Our students enjoy coming to class."

A major planning effort went into incorporating critical thinking. "We may be separated by doors, by time, and by some of our curriculum, but we certainly are united in our approach to instruction," said one teacher. "Critical thinking is the driving force behind everything we do." All three have developed questioning strategies to elicit higher order thinking, and they agree that "we ask a lot more questions and a lot better questions than we ever used to."

They've also created what they call "inquiries." These are a series of choices students can make about follow-up activities to classwork. The teachers have designed each inquiry to include activities labeled for each of Bloom's cognitive levels, and each activity is given a certain number of points, increasing as the student chooses from the higher levels. Students understand the differences between levels. They also know that the activities have been designed to appeal to varying learning styles within each level. One student said he usually chose ones that allowed him to make things with his hands.

Another simply said, "I choose the stuff I'm good at."

If students finish an inquiry ahead of the two weeks allotted, they may work on their "collection folders" in which they keep information they find about their topic. Ultimately, the information is used to write a report, which is delivered to the class. Most students have chosen topics related to water, such as "fish of the Red Sea," "Atlantis," "myths and legends of the ocean," and "coral." Students said they liked the folder idea because it gave them both freedom and responsibility. "It helps me make decisions," said one. "I like having a choice," said another. "The teachers don't tell us we have to do this or that. I get to put in the folder what I consider important."

The teachers felt that their efforts had produced good results. "I can't tell you that our students are better learners, although I think they are," said one. "I do know they have gained the ability to analyze a lot better."

Though one teacher joked that the team's work this year toward thematic instruction has been an exercise in "seeing what *not* to do," all three feel they have made tremendous strides. "We work together extremely well," said one. "We all know what the others are doing, and we do a lot of things in sync in the best interest of the students." Another spoke of the excitement of "feeding into one another, complementing one another with our curriculum."

Some frustration is perhaps inevitable. "We do get kind of down because we started the year all excited, thinking we were integrating and using thematic instruction, and now we haven't done as much as we wanted," said one. "It doesn't mean that we aren't still dynamic, creative teachers. But it just hasn't happened as quickly and as neatly as we had thought it would." All three, however, are adamant about sticking with it. "We wouldn't go back to teaching independently ever again. Sure, this is a lot of work, but it beats doing it alone. It gives my teaching a direction, a goal. We get a lot of support from one another when we work together, and it definitely is better for the kids."

A Seventh Grade Team

This seventh grade pilot team comprises four teachers, three with elementary school experience and one with high school experience. The combination leads them to describe themselves as "the best of both worlds." They feel these complimentary perspectives help them better understand the unique age group they now teach and thus be more effective. As one teacher commented, "We have students who are poised at a tremendously important point in their lives, no longer children and not yet teens."

This team has done a great deal of planning, collectively and in pairs. Team spirit abounds and members have even adopted a team name: "The Eagles." Students have Eagles Team tee-shirts, and all 120 come together periodically for special activities. For example, during one class session their teachers took them to the football bleachers for an awards ceremony specifically designed, said one teacher, to "create a sense of ownership and belonging." The awards have encouraged the team spirit among students whose classrooms are not near each other. And they enhance students' self-esteem. "We think it's important to give kids lots of positives," explained another teacher. "We do awards frequently and make sure that every student is acknowledged for something." During each ceremony, all students are recognized for their uniqueness and individual talent. Each receives a handmade card with a cute saying on it as well as a foil-wrapped chocolate coin.

"Patterns" is the team's theme this year, and each teacher tries to tie it into his or her curriculum even if only in a small segment. In addition, each classroom has bulletin boards highlighting patterns and relationships from their content area. These teachers also address a specific social skill each month, which they try to tie into curriculum. October's theme, for example, is respect. In December students learn about sharing and caring, and in March they talk about responsibility.

The team has also adopted a set of year-round rules, such as "be prompt," "be responsible," "be prepared," and "be respectful." They feel the rules allow them to avoid the negative "don't" by stating their expectations in a positive way. As one teacher explained, "We come from the same philosophy: we give lots of chances and latitude. There is also a lot of 'at home' communication." To establish better communication and align parental support behind student learning, the team has already held 29 parent conferences.

The team meets daily with jam-packed agendas and dynamic discussions. A typical team meeting finds all four kicking around a lot of different ideas and talking almost simultaneously. Natural pairings have evolved among them. The core teachers — social studies and language arts — generally plan together and have done a lot of extra planning because they see their areas as "tightly tied together." In turn, the math and science teachers tend to plan together and try to support the other two as much as their curriculum allows. "For example," says the math teacher, "I moved geometry and metrics up on my original calendar to better tie into what science was doing, and both of us are making efforts to tie into a unit the other two are doing on Rome." Following is an example of how two teachers integrated the patterns concept.

Arabic Patterns

During one planning session the math and social studies teachers discovered one of those district-advocated "lucky links." The social studies teacher mentioned that she was going to do a unit on Muslims, explaining that she had taken a lot of slides of Islamic design during a recent trip. The math teacher immediately connected this to a unit he was planning on geometric design. "With just a few adjustments we got synchronized and the kids love it," said the math teacher. "You know it's working when students talk about what they're doing in another class to help explain something we're doing in this class." The science teacher also recognized an opportunity to "link up" because one of the Islamic motifs is plants.

During one of the class sessions in social studies, the teacher listed three things on the board that students would see in Islamic design: geometric designs, calligraphy, and plant designs (leaves, stems, flowers). She then directed them to go through the books on their desks and find some examples. After discussion of the examples they found, she explained why Islamic law was responsible for many of the designs. She also pointed out that Islamic design tends to be very creative, incorporating poems that make words look like what they name — for example, a poem about a tree written in the shape of a tree. There is also much use of illusion. "One of our American artists, Escher, has used the idea of illusions from the Islamic design to create his famous woodcuts. Your math teacher has some of these drawings and will show them to you."

She then calls for volunteers to go to the board and draw some basic geometric designs. Several students go up and draw a circle, a triangle, a parallelogram, and a rhombus. "I know you're doing some other things with circles in math," she says, "and we'll see some evidence of circles in Islamic design. But primarily we're going to see designs with straight edges." She emphasizes the various patterns that are the hallmarks of Islamic design: designs with repetition and those beginning from the middle and working outward.

She turns out the lights and begins showing various slides taken from Muslim tiles, windows, a mosque, a courtyard, and a rich man's hallway. In each instance, she asks students to pick out some of the geometric designs that are predominant, which they do very well. All the students are involved in the lesson, and it is apparent they are making direct connections with their math classes. The teacher concludes the lesson by passing out photocopies of basic designs, then shows design work completed by previous students. She instructs the students to begin thinking about creating their own design by either expanding outward from the center or repeating endlessly across a page.

That same day in math, the teacher gives a lesson on how to use a compass and ruler to create a geometric design. He begins with basic rules of compass use, then illustrates how to draw a circle, then an arc within the circle. As he continues drawing arcs throughout the circle, with students following step-by-step, it becomes appar-

ent that a design is emerging. By connecting arcs with the ruler in various configurations, then coloring segments, a very complex geometric design is produced. At one point the instructor asks, "Where have you seen patterns in other cultures?" Students respond, "Islam" and "the Arabic world." He has the students point out the various geometric forms they have incorporated into their drawing, eliciting responses such as "a triangle," "squares," "rectangles," and "a circle."

All four teachers in this seventh grade pilot team feel they have accomplished a lot. They have many plans to better mesh their curricula and to correlate with what they've already learned without being constrained by the overriding thematic structure. For example, the science teacher intends to include a section on "Black Death" next year when social studies and math do their Islamic/geometric design unit. "I might even include a section about foods here," he said.

Later in the year, teachers will combine information about the rain forest and stewardship of the earth with word problems in math relating to both. Another unit will revolve around metrics/measurement in math and measurement of body parts/volume in science. Science and math are also considering ways to use food in science lab experiments with consumer math, e.g., weighing bananas, determining how much is edible, how much is water, what the food value is, how food value relates to cost. Said one teacher, "We try to look for entire units where we can overlap, but that's more difficult. Sometimes we have to settle for just a lesson or two here and there. Sometimes it's just the use of a concept or even a word in many different and connecting ways."

Though the team is not "pure" yet, as one teacher put it, they believe they're getting better. Generally they feel they need more time to plan together. "We should have taken a full day off for planning sooner than we did," said one. "We finally did that after Christmas, but we need to build such days regularly into our schedule, with lots of time at the beginning of the year." Another agreed that with more time a fully integrated unit would probably emerge though he doesn't see all four teachers overlapping content simultaneously for at least another year or so.

All four teachers are enthusiastic about what this approach means for kids both academically and socially. "I was a high school teacher. When I moved to Santa Clara and was hired at the middle school, I figured it would be a stepping stone back into high school," said one. "Since being here and teaming, I've decided middle school is the place to be. I love it. I wouldn't leave here for the best high school in the state."

An Eighth Grade Team

The eighth grade pilot team's progress parallels that of the seventh grade team. They've found numerous places where their curriculum naturally fits together. Their joint planning has created a sense of unity and teaming among their 174 students. All four teachers feel that parental connections are stronger and that kids perceive the teams positively. "The students like it that their teachers know one another," one commented. "It gives them a secure base. They perceive that we are friends socially as well as academically, that we care about them individually, and that we care about their friends."

The change that students sense is real, said the social studies teacher. "Teaming makes us student-centered. I care about what the kids are doing in math and science as well as in social studies in my class. My picture is bigger, and it helps their picture expand as well."

This team cited notable successes with curriculum. For example, when students read Sherlock Holmes's "The Speckled Band" in language arts, they also studied chromatography (fingerprints and other crime-lab chemistry) in science, created puzzles in math, and studied about lost colonies in social studies. In another lesson students read *Flowers for Algernon* in language arts and studied left brain versus right brain in science. In a unit planned around inventors and inventions, students looked at the histories of various inventions during the industrial revolution in social studies, went over the inventive process in science, did layouts for their own inventions in math, and did reports on various inventors in language arts.

Like other teams, these teachers expressed the need for more time and felt they have much to do before being truly interdisciplinary. They want more back-to-back scheduling and concentrated

summer planning sessions. Not one of them would be willing to go back to working independently again, despite the extra effort this new approach takes. "We knew this would be a lot of work," said one. "But teaching is our profession, not a sideline. We give as much as we can and then some."

Issues

One of the bigger pluses Buchser teachers cite about teaming is the sharing of materials, ideas, and philosophies. As one said, "The sharing has not only enriched pilot team members, but has involved other people in the school as well. Other teachers, the SIP coordinator, and the librarian are on the lookout now for materials for us and for one another. It's amazing. I really feel supported in a way I hadn't realized was missing before." The gold coins handed out by the seventh grade team during awards had been diverted by the SIP coordinator when they were left over from magazine sales. "I did it because I knew this team did a lot of special, fun awards," she said. "I also watch for materials that pertain to either water or patterns."

The librarian now says she needs additional staff assistance. "I am so busy since teachers started teaming, and it is getting busier each day. Teachers are using the library now. Many never used to come near here or want anything to do with my materials." She frequently meets with the various teams and is often an integral part of their planning for various units. Some of the teams even meet in the library, so the materials are available and on hand for perusal as they make decisions about what to include. "The teachers will notify me in advance what they are going to be teaching — say, a unit on medieval times. Then I pull a stack of books and card listings out for them. They come in for their meeting, and what I have given them triggers additional ideas. I pull out more books and cards, and eventually they have a nice collection of materials."

She also purchases books and materials when she knows that a team is doing a unit on a particular topic. "The more the teachers talk to me, the more I get for them." Students, she said, are using the library more frequently now; over a thousand books go in and out each week. She also takes carts of books to classrooms where both teachers and students can use them. This allows students to see that their teachers too use these books. But it also better connects the readings to in-class project work and frees kids from the idea that research can only be done "over there" in the library. "The books become more alive for them, more real."

The Future

To help bolster district level support for interdisciplinary teaming, the staff development office issued the results of a recent questionnaire filled out by the pilot teams. It revealed several benefits of teaming: communication, collaboration, and cooperation have increased; curriculum correlation and integration is increasing; student attitudes and learning are improving; and, problem facilitation/resolution has increased.

Certainly the administration at Buchser is committed to teaming. And that commitment is reinforced by the teachers' determination to make it work and willingness to give so freely of their own time to do so. Some teams are still in the fledgling stage; others have been finding "lucky links" and taking advantage of them; still others have advanced to trying thematic units that span all core content. All teams recognize that they need more time and are pressing for ways to get it. Meanwhile, teachers enjoy the camaraderie that comes from working together. And though they admit that teaming takes tremendous amounts of energy, they feel that the academic and social advantages for the kids make that effort worthwhile.

The Accidental Team: Fort Miller Middle School (Fresno)

Fort Miller Middle School is centrally located in Fresno and bordered by busy commercial streets. Small tract homes define the neighborhood, with several apartment complexes nearby. The school serves 870 seventh and eighth graders. The student population is 45 percent Hispanic, 25 percent Asian, 18 percent black, and 12 percent Caucasian. Seventy-four percent of the students are bused from southeast and western portions of the city. Parents are low- to middle-income; many subsist at the poverty level. Student achievement, improved the last few years, falls in the low to average range.

Dates of Visit: November 6-8; December 11-12, 1989. Principal: Julie Adams.

An Accident Waiting to Happen

Four years ago Fort Miller's then-principal made the first move toward combining disciplines at the school when he assigned teachers to partner teams. The ostensible purpose was twofold: to give teachers an opportunity to begin working together and to assist with student social and discipline issues. But as one teacher commented, "The focus was definitely on discipline."

Despite that inauspicious start, one trio of teachers — the Pathfinder team — has managed to build an extensive interdisciplinary curriculum that other teams look to as a model.

The team's two original members — Ms. T (math/science) and Ms. S (history/geography) — first began working together when a workshop on outdoor education inspired them to jointly develop and teach a unit. The upshot, they say, was "such an exciting change in students' attitudes towards school that we were ready to do this forever." Then one day when Ms. T was at the copy machine, Ms. C, the English teacher, happened to notice the geometric shapes Ms. T was reproducing. Intrigued, Ms. C said, "I'm doing Greek and Latin roots in my class. Why don't I do vocabulary that coincides with your work?" Thus, by accident, this third teacher was recruited, and the Pathfinder team was born.

The three teachers arranged to meet over the summer to plan activities. They put together quarterly themes they could each "tie into" during the year: 1) law and order, 2) grammar rules, 3) personal frontiers, and 4) our environment. These were deliberately broad, loose themes that provided latitude within each content area, since the teachers didn't yet feel ready for a structured effort to coordinate topics. "It was still pretty much an individual effort," said Ms. T. "We each agreed to relate to the quarterly themes where appropriate within our curriculum."

They then looked for materials to complement one another's curriculum and began planning together in a way that allowed curriculum to overlap from class to class. Ms. T recalled the early results: "I was teaching two seventh grade classes, while Ms. C was teaching just one. Those in my class who had Ms. C for language arts just lit up when I started talking with them about perimeter and geometric names. They saw added meaning, and they were really excited. The whole tone of the class changed. This showed us how important it is to expand a subject by tying things together across classrooms."

The Pathfinder team now has a yearly calendar designed around seven thematic curricular units: 1) "The Voyage of the Mimi," 2) outdoor education, 3) presidential elections, 4) Charles Dickens and Victorian England, 5) history day and science fair, 6) health and wellness, and 7) California history. (For a detailed description of the units, see Attachment 1). They send this calendar along with a newsletter to students and parents before

each school year begins. The newsletter welcomes the students to the Pathfinder team, introduces the three teachers, and describes some of the activities students can expect throughout the year.

For each unit the teachers have prepared written descriptions (outlining objectives, activities, and evaluation procedures), compiled materials, and devised lengthy lesson plans.

All three teachers stressed the importance of understanding the developmental needs of middle school students. "Teaching in the middle grades is not the same as teaching any other age," said one. "Middle school teaching requires attention to the whole child's needs." For these teachers that means presenting content in ways that allow students to correlate school activities with real-life experiences; analyze, synthesize, and evaluate information, rather than simply accepting it at face value; and work cooperatively with others.

A Thematic Unit: Outdoor Education

Approximately 84 students attended the one week Pathfinder field trip to Bass Lake (one hour northeast of Fresno in the Sierra Nevada mountains) last November. They stayed at a private camp within walking distance of the lake. The cost for each student was $50, and most earned their tuition through a variety of fund-raising activities sponsored by their three teachers (beef jerky sales, jog-a-thon, spaghetti dinners, etc.). Students bunked four to a room in barracks-style buildings (one for girls, one for boys) and congregated for meals and group activities in a separate building. A typical day's agenda was as follows:

6:30 am - wake-up, showers
7:30 am - breakfast
8:30 am - group sessions (four separate activities)
12:00 pm - lunch
1:00 pm - afternoon group sessions
4:00 pm - rest and/or recreation
5:30 pm - dinner
7:00 pm - groups/planning/skits/singing/games

On a district form the three Pathfinder teachers state that their objectives for this unit are to expose students to: 1) intense group interaction, 2) orienteering and measuring, 3) environmental issues, and 4) local history. Activities listed include: 1) using navigational skills learned from "The Voyage of the Mimi" to measure distance and depth of water; 2) following a premapped course in the forest based on skills learned in the "Mimi"; 3) expressing themselves through arts, crafts, games, music, and drama; 4) participating in group projects and discussions regarding today's environmental issues and local history; 5) writing and sharing observations, thoughts, and insights concerning environmental and personal problem solutions; and 6) hiking to Milltown to excavate for artifacts and completing a plat map of the Old Milltown area.

Besides the three Pathfinder teachers, the art and woodshop teachers and two student teachers attended and taught during the five-day session. Students were assigned colors and numbers through a computerized random assignment done at the school. Each day their color and/or number determined which activities they would attend, thus mixing the students each session. In other words, no cliques or "tracks" could form as students moved from activity to activity. All students were given camp notebooks that contained various lesson instructions, worksheets, and other materials. Group sessions included such activities as river mapping, a nature walk/write, treasure hunt/compass plotting, trust building, nature crafts, etc. Approximately 16 to 20 students were in each group activity. Two of the activities are described below.

River Mapping

Ms. T met the students on the front porch of the girls' dormitory and had them sit in a circle. She began by discussing various liquids and having the students visualize

amounts (e.g., a gallon of milk). She then led the discussion to people's use of water and amounts used for various daily activities such as showering. Students estimated how much water they each used in a day, recording the amounts in their camp notebooks. After they shared the various amounts recorded, Ms. T explained that most people use between 200 and 400 gallons per day. Students discussed this in light of the drought facing parts of the state. Ms. T then described how they would be measuring the flow of water in the nearby stream, ultimately determining how many people could live off the stream for a day. She divided the students into smaller groups, and they hiked to the stream.

Once there, Ms. T reviewed directions for the measurement activity, directing students to their camp notebook. She passed out string and ping-pong balls, then sent each group off to a different point along the stream. The students worked together, making several tries at floating the ball (to later compute the average time it takes to float from point A to point B). The entire activity took approximately two hours. They returned to camp, where they completed their calculations and made final entries in their notebooks.

Nature Hike/Walk

Ms. C met the students on the dormitory porch and had them sit in a group around her and open their camp notebooks to the pages for this activity. She talked about the forest and the importance of "looking and listening" while there. She then got two backpacks for all the camp notebooks and assigned two students to take the first "backpack shift." Students lined up with the teacher in the lead, one student teacher in the middle, and one student teacher at the end of the line for safety. The students hiked uphill for a little over an hour with brief pauses as the teacher pointed out things to observe. For example, at one point Ms. C directed everyone's attention to the woodpecker "pinging" the tree overhead. At a small waterfall, she stopped the students again and had them listen to the sounds of the water as it splashed across the rocks. At a large rock clearing she had the students carrying the backpacks take out the notebooks and pass them to their owners. Students turned to their writing page and began to list things they had seen and heard. Notebooks were then loaded back into the packs and two new students volunteered to carry them.

This pattern of hiking, stopping and discussing, and writing continued until everyone reached the mountaintop. At the top the teacher reached into her backpack and took out treats for the students. Everyone relaxed for 10 minutes before starting the descent.

Toward the bottom Ms. C stopped the group one last time, had the notebooks distributed, and directed students to read over and share the entries they had made so far. Ms. C then had them turn the page to "hiking poetry" and read the introduction with her. A discussion began about what it means to be "attuned." One student said, "To me, it means getting to know one another differently." Another said, "It means making friends with someone you didn't think you'd like." Another talked about how nature affects man: "All those things we saw and heard? Well, it made me think about how important it is to be aware of the beauty of simple things around me." One student commented, "I feel quieter after being out here."

Ms. C instructed the students to write a poem describing their feelings, using some of the sounds and sights they had just experienced. Some students went off to sit on rocks or tree stumps. Most began writing almost immediately. The forest was quiet. Approximately 30 minutes later, Ms. C said quietly, "We need to think about going back." Students stretched, yawned, and began talking very quietly to one an-

other. The teacher now asked them to select the line they liked best from what they'd written and write it on the back of their papers. She said they would have time that evening to read their writing to the group if they wanted to. Students put the notebooks back into the backpacks and hiked back to the camp.

A Positive Experience

This is the second year the Pathfinder team has taken an outdoor trip, and all involved feel positive about it. The principal, Ms. Adams, describes the outing as "unique and worthwhile." She feels that students gain a lot, both academically and socially: "They expand their horizons through this experience. And the bonding and reliance on others is strong. Some of these relationships will last for years."

Pathfinder teachers agree that kids come back excited and with lots of new friendships based on their shared identity as Pathfinders. For this success the teachers credit the qualitative difference between these outings and a lot of school trips. In Pathfinders, students care for and nurture one another, said Ms. T. "We have such a diverse mix of students, and they could really cause a lot of trouble. But as a team we work hard from the beginning of the year to instill in them strong social skills and the ability to regard each other's differences as okay." Ms. C added, "It's especially important for students at this age to learn these skills. I think our students have done an outstanding job!" Ms. S feels that trust-building activities done at camp are very helpful. "Helping one another over a 10-foot wooden wall, working together to move a trolley [two 4x4 beams approximately nine feet long that a team stands on and, holding ropes, move forward in giant steps] over a poisoned yogurt area — these things teach them that they can work better together than by themselves. They learn that it's important to be able to work with and trust their neighbors."

All three teachers were also quick to point out the value of the outing's curriculum. Said Ms. C, "Students are learning about their world by using math, writing, reading, science, history and geography."

Students too were very enthusiastic. Said one, "I've made so many new friends. I think I do more work here than when I'm in school, but it's worth it. I'm glad I came."

Team Teaching to Combine Math/Language Arts

Since working together on the Pathfinder team, Ms. C and Ms. T have found team teaching so enjoyable and productive that they recently met with the principal to arrange a schedule that allows them to combine their two classes. They estimate that they teach together approximately 40 percent of the time. "We do it when we can and when it's appropriate," said Ms. T. When they do, they mix periods one/two and four/five, teaching a combination of seventh and eighth grade students. They teach a fairly heterogeneous mix of students in morning classes, though only afternoon classes include GATE students.

The two teachers report that their greatest pleasure in team teaching is collegiality. "It's exciting to plan together," says Ms. T. "We just bounce ideas off one another. Plus, we have different abilities that we each are able to share with more students." They also mix grade levels together because they have found that the combination of students offers many advantages, including development of mutual respect among students of different ages and an opportunity for older students to serve as models for and to teach the younger ones. They rotate their team-taught curriculum on a two-year cycle, thus eliminating repetition.

Apart from the seven broad curricular units that all three Pathfinder teachers work on, Ms. C and Ms. T have many smaller units that just the two of them teach together. Here is one example:

A Team Taught Lesson/Language Arts and Math (Winter Holiday)

This three-day, six-hour lesson done just prior to the December holiday focuses on Christmas as a cultural activity.

In a large science room with 12 lab-type tables, five to six students sit at each table according to their group assignment. As-

signments are made for each new unit or project, with groups reflecting a mixture of the two classes. Group assignments are changed quarterly throughout the year to give students an opportunity to work with different students. Painted onto the back windows of the classroom is a large mural facing outside which reads, "The Pathfinders Wish you a Merry Christmas, Happy New Year." The students have designed and drawn snowmen, reindeer, trees, bells, and other Christmas symbols across the top and bottom of the windows.

Day One:

Students enter class and sit with their assigned groups. Ms. C begins class while Ms. T handles roll-taking, student errands, and miscellaneous bookkeeping tasks. Ms. C announces that they are starting a new unit today and asks students to put on their best listening ears. She reads *'Twas the Night Before Christmas*, then shares what some of her family members like to do during the Christmas holidays. For example, she tells about the "silly little presents" that her father buys each year for everyone in the family. Ms. T then shares some of her family experiences such as not eating meat on Christmas Eve, "because we're Catholic." The two teachers pass out excerpts from *Christmas Around the World* by Emily Kelley — short, written descriptions of the celebration of Christmas in Mexico, Spain, Iran, China, and Iraq — and encourage students to "read-around" within their groups. Students do so for approximately 10 minutes as both teachers circulate in the room, stopping at various groups to monitor progress.

Ms. T interrupts the students' work. "What customs were discovered in your reading for each of the countries?" she asks. Many hands go up. One student says, "In China they light their houses with paper lanterns." Ms. T writes "paper lanterns" on the overhead. As other students volunteer information, she continues writing down key words. Ms. C then asks the students if they can think of categories for these customs that would apply to all countries. "Food," she says, is a good example of a category. The students come up with others and Ms. C lists them on the overhead:

1. food
2. presents
3. decorations
4. costumes
5. gifts
6. music
7. activities

Ms. T now explains that on Friday (day three of unit) they want to have a "family traditions" party, with all students participating. "You will share some of your customs – what you do at your house. How do you get together? What are some of your activities — games, a riddle, a puzzle — anything that says 'this is how we celebrate holidays.'" As the students start to get into the spirit of the upcoming activity, Ms. C encourages them to "wear costumes, bring food, put on a skit, or whatever."

The teachers now direct the students into three groups based on their cultural backgrounds: Asian, American, and Hispanic. The teachers circulate among the three groups and break them into subgroups, such as blacks or those of Chinese ancestry. The students are given approximately 15 minutes to share customs with their groups, using the criteria they had determined earlier, and to plan for Friday's activity.

Then Ms. C again talks to the class about logistical details such as letting their moms know about Friday's activity. "If you are planning to bring food, you don't want to wait until Friday and then say, 'Oops. I forgot to ask mom!'" She tells them there will be time tomorrow to continue planning with their groups.

Ms. T now takes out her guitar and says, "We're going to sing a song you've prob-

ably heard before — everybody join in." She plays "The Twelve Days of Christmas," singing with Ms. C, and the students sing along readily (it is apparent that the students have sung together on other occasions: no one seems hesitant). Each time they finish the words "and a partridge in a pear tree," guitar and singing stop and Ms. C reads from a book of letters Lady Catherine Huntington wrote to Lord Gilbert Faraday (*Letter of Thanks: A Christmas Tale*, by Manghanita Kempadoo, 1969) about the gifts he's sent that are chronicled in the song. At the beginning of the book, Lady Catherine is quite thrilled and pleased with each gift. But as the gifts keep coming and raise issues of maintenance (upkeep and feeding of livestock, etc.), she becomes more and more disgruntled and upset. For example, after receiving the six geese-a-laying, she writes to Lord Gilbert:

> Thank you for your unusual gift of six laying geese. My big problem is where to put them. They are, at the moment, ruining my new croquet lawn and flowers. Can you tell me what to do with their eggs? No one seems to want to buy them. I dare not keep them for six geese are a fright to the hens.

In addition to the singing and the reading, a volunteer walks around the room with a book of large, rich illustrations of each gift, showing them to the students.

The letters from Lady Catherine become increasingly negative and formal with the addition of each gift. The concluding letter is from the Lady's secretary, indicating that she will be returning all of the gifts except the gold rings and the partridge. The students chuckle.

Ms. T laughs along with the students, then says, "Can you imagine the amount of money Lord Gilbert spent on these gifts?" She pauses, then places on the overhead a list with the unit cost of each of Lord Gilbert's gifts at today's prices. She then puts up another transparency with blanks by each gift. She tells the students to figure out the total cost of all the gifts that Gilbert gives each day. For example, on the third day he gives not only three French hens, but two turtle doves and a partridge in a pear tree. Students must calculate the total price. After the class solves the first three problems together, the teacher assigns each group one of the remaining problems, giving them 10 minutes to complete it. During the final minutes of class she goes over each group's answers, displaying them on the overhead and making corrections.

Day Two:

The students enter and quickly seat themselves in their assigned groups. Ms. T instructs the group to review their answers on yesterday's item sheet and total Lord Gilbert's cumulative costs for the entire 12 days of Christmas. She reminds them that as they tally each day's costs they must include the previous day's costs as well. "Remember," she says, "Lord Gilbert sent four calling birds, three French hens, two turtle doves, and a partridge in a pear tree all on day four." With a groan, the students settle into the task.

Students are now instructed to write thank you letters to Lord Gilbert for his many gifts. They work independently within their group. They are to complete their letters then spend time continuing their planning for Friday's activity. As the students write, the teachers call individuals to the front desk where progress is discussed and a report filled out (a once-a-semester school-wide task, which occurs today).

Approximately 45 minutes later the teachers announce that it is time to change tasks. They pass out letters written by kindergarten students to Santa Claus. (This team has arranged several letter exchanges with elementary students from a nearby school). Each student receives one and is to write a

letter in response, assuming the role of Santa. The students readily involve themselves, and the teachers continue with progress reports until the end of class.

Day Three:

Students arrive early, bringing food, clothes, games — even a pinata. When the bell signals the beginning of class there is an atmosphere of excitement and gaiety. Someone has called the local newspaper, and a reporter has come. The teachers have the students sit in their assigned groups. One group at a time comes to the front of the room, and each student shares something. One tells about the cookies her grandma makes each year. Another describes opening presents on Christmas Eve, one at a time. Some sing songs. Others dance. Several wear costumes.

After all students have had a chance to share, everyone eats. Many students begin playing games. One student has involved several others in a Southeast Asian ball game played with their feet. A group goes outside to break open the pinata. All continue to eat and play right up until the bell rings.

Student Response

Six students, randomly selected from both classes, talked positively about the team teaching done by Ms. C and Ms. T. One particularly liked having a "kindergarten friend" to visit with and write to. "I've learned to cooperate with kids smaller than me. They look up to us." Three students praised the opportunities to work in groups. Said one: "It makes learning easier. I learn more because I get so many ideas from other students. My own ideas begin to change as a result." Another added, "If you think critically and listen when someone's opinion differs from yours, you can learn from them and change your own thinking." The third liked getting help from his peers: "If you have trouble, you can go to a partner or someone across from you. We can depend on each other." All six students agreed that "you work harder in groups." And they saw long-term benefits in combining classes. As one put it: "It's good for us to have double periods because we get to work together. In the future we'll be able to help each other and not have so many fights."

Students did report some problems about working together so much, however. One spoke of confusion: "Sometimes the teachers will be hurrying us and we're not done, or we're getting different answers. We don't have time to work it out, and then they're collecting our papers." Another sometimes felt stuck doing more than his fair share: "Some students just give up and then you have to do all the work. That doesn't happen too often though." Five of the six said they prefer group learning to individual learning.

Things to Work Out

Although all teachers at Fort Miller are assigned to teams, not all have the Pathfinder team's level of involvement. Ms. Adams, hired a year ago, has been working to develop trust with the teachers. Noticing early that many teams were not working well together, she did a sociogram with the faculty and made some team changes that teachers have found positive. However, she said, "I want the teachers to plan together, to integrate their curriculum. That just isn't happening for most of the teams."

Most teachers from other teams indicated that they are making progress at working together. All teams have adopted names to create an identity. They plan together to create common discipline rules and consequences, goals and expectations. One team member described a much looser structure than Pathfinder's. "We cross some content, but we don't do 'units' or teach together. What I like is that we have the same discipline rules and that we have the same prep period." Another teacher expressed some confusion about what "teaming" was supposed to be: "There aren't any set guidelines. I guess it's pretty much up to us to determine what we want to do." One team spoke of developing several extra-curricular assignments for the students, but admitted, "We know we could do much more, but we just haven't really put forth the effort."

Ms. Adams believes that all teams will be integrating curriculum eventually. But, she says, it will take time: "I try to take on one thing each year.

When you try to do too much it turns people off. It makes them uneasy. Last year I worked with the teams to get them reorganized. When I take things slowly, teachers are willing to work with me. They are learning to trust me." She described how she sends notes out to teachers when she notices them doing something with teaming that pleases her: "I saw your team working to put up a bulletin board" or "I saw your team sharing a room." In fact, she has designed a half-sheet note with "I saw your team doing something terrific" printed on it, and she simply writes in what she has observed.

"When I can make connections between things, that's when learning has the most meaning. It's got to be the same for kids."

— Fort Miller teacher

One teacher feels that the principal needs to more clearly define team expectations. "Until I know what she really wants, I can't do it. It's too loose." This teacher's suggestions for team improvement included workshop attendance and off-site school visitations.

Ms. C and Ms. T have delivered several workshops on interdisciplinary teaming in Fresno and the surrounding areas. They have also worked with other teachers on staff. In fact, many staff members have attended their inservices. Both teachers have spoken at national and statewide middle school conferences.

For all their dedication to helping others, however, they do express some discomfort about working with teachers at their own school. "Our principal wants us to work with the other teams, but they're our friends...you can't put pressure on if you're friends." They worry that they won't be effective. And since they are held up as the "model," they are concerned there may be resentment.

On the whole, the school has an atmosphere of optimism about teaming. Most of the teachers are eager to "take the next step," recognizing value for students. As one teacher said, "I know *I* learn best when things relate. When I can see something make sense across the board, when I can make connections between things, that's when learning has the most meaning. It's got to be the same for kids." Another commented, "Learning is not compartmentalized. To think that we can put math or literature into one hour a day is foolish. They have to tie together. Our brains don't work as well on the 'one-hour-a-day' plan. And we lose a lot."

A few teachers feel overwhelmed by the Pathfinder team, particularly the team-teaching done by Ms. T and Ms. C. One teacher felt it was because of the way the two "click." "They seem to be on the same wavelength. One will have an idea and before she has finished describing it, the other is building on it. You'd think they'd been working together for years and years." Another commented, "They're a good model of a good team. I don't know if our team could even come close." Ms. C and Ms. T agree that working together is special. "It may have been an accident that brought us together, but it sure works. I love coming to school because I love teaching, but I also love having someone who works with me so well. My days are a pleasure. I look forward to everything we do together."

As of this writing, Ms. C and Ms. T have accepted positions for the 1990-91 school year at King Canyon Middle School (Fresno) where they will be on a year-round schedule, working with their former principal.

Fort Miller: Attachment
Pathfinder Team's Thematic Units, 1988-89

Unit 1 — "The Voyage of the Mimi"
- Videos and Activities Sept/Oct
  - mapping
  - math activities
  - scientific observations
  - whale and environmental issues
  - journal writing
- Field Trip — February 1
  - whale watching and Monterey Bay Aquarium

"The Voyage of the Mimi" is a 13-episode video of expeditions that take place on a boat equipped with technology and manned with a scientist, an oceanographer, three students, and two teachers. The plot development and characterization give rise to numerous oral and written language arts activities. Geography and mapping skills are integrated throughout the videos, and we utilize two computer activity programs that are components of this program. We develop the scientific method, incorporating science processes, math skills, and writing through integrated math/science projects.

Sources
- Sunburst Publishers: Videos, computer programs, student books, activities
- AIMS Activities (Activities Integrating Math and Science), Fresno Pacific College

Unit 2 — Outdoor Education
- Camp Gaines November 1-4
  - group interaction
  - measuring and mapping
  - compass activities
  - local history
  - journals
- Follow-up Field Trip — May, 1989
  - Yosemite National Park — Hike to Vernal and Nevada Falls

We plan and develop our own units of study for our outdoor education program. We schedule this unit early in the Fall to establish a positive rapport from the start and begin as a team. Our activities include numerous math, science, language, and geography skills. Some examples of activities are: boating, to measure the lake width and depth; sensory poetry, written after a six mile nature hike; following and mapping a compass course; writing and performing plays/skits. In each activity we stress group cooperation and positive social interaction. We present problems and use questioning strategies to stimulate critical thinking.

Sources
- *Sharing Nature With Children* by Project Learning Tree Activities, Project Wild
- *They Felled the Redwoods* by Johnson
- AIMS Activities

Unit 3 — Presidential Elections
- Mock school election
  - prepare campaign materials
  - role-play candidate speeches
  - polls and predictions

In history we registered voters, prepared the ballot, and studied the issues and candidates of the National Election, role-playing their positions. Concurrently, in language arts the students wrote the voter pamphlet for the school mock election and prepared and debated the major propositions. In math the students conducted pre-election polls comparing their statistics to national pools. On election day our team ran the mock election, counting the votes and reporting the results to the student body.

Sources
- "Election '88" by NIE
- "Votes" by Interact
- Local voter pamphlets and sample ballots

Unit 4 — Charles Dickens and Victorian England
- Read *A Christmas Carol* by Charles Dickens; study Christmas in different cultures, emphasizing Victorian England; and study foreign currency and exchange rates
- Field Trip — December 6
  - Meux Home (local Victorian mansion)

Students conduct research in cooperative learning groups, preparing visual and oral presentations on various aspects of the Victorian era. We

read *A Christmas Carol*, studying the language, characters, and celebrations of the era. We research the first World's Fair, emphasizing personalities and inventions of the time. The unit culminates with a Victorian Christmas party, complete with authentic costumes, food, and games.

Unit 5 — History Day and Science Fair
- Research papers and projects
  - Each student will write on research paper and complete one project for the other class.
- parent meeting in early January
- awards ceremonies in February

Students who write a science research paper complete a history project and — conversely — those who write history research papers do science projects. Outstanding projects and papers are entered into district and county Science Fair/History Day Contests. Students follow specific guidelines for writing a research paper (not just a report). "How to write a research paper" becomes the language arts curriculum. In math/science classes the students learn and practice all the science processes emphasizing the scientific method of experimentation. The History Day theme, introduced in the Fall, is discussed and applied during the history lessons each week.

We involve the parents in each stage of the unit, first through a letter introducing it. We hold an evening meeting to explain our expectations and to share slides of previous projects. On the evening of our History Day and Science Fair, we invite parents to view the projects and papers and to enjoy the awards ceremony.

Unit 6 — Heath Unit
- Wellness concept
  - self-confidence and self-esteem
  - service related project
  - personal positive health behavior contract
- Various Guest Speakers

Students read articles and discuss current health issues and adolescent concerns. Using a variety of guest speakers, the students are challenged to consider their own sense of wellness and lifestyle. We encourage them to consider their physical, social, and spiritual well-being and to actively choose to improve their health and living. Students incorporate graphing and calculating skills to help chart their biorhythms.

Sources
- *Health Through Discovery* Dintiman and Greenberg
- AIMS Activities
- "Health Framework for Fresno Unified School District, K-12"
- Periodicals from School Library

Unit 7 — California History
- Read *Red Pony* by John Steinbeck
  - local history
  - population trends and statistics
  - natural ecology of California
- Cultural Party — students share parts of their own heritage
- Field Trip — April, 1989
  - Oakland Museum and San Francisco

Before reading *Red Pony* by John Steinbeck, students begin the study of California's history and rich cultural diversity. Population growth statistics, current social issues (i.e., refugee concerns and water problems), and ecology are discussed within the cooperative learning group setting. Students actively research the issues and present their "solutions." The unit culminates with a "culture party," where students share foods and customs unique to their own family heritage.

Sources
- *Red Pony* by John Steinbeck
- "Steinbeck's Unique View," by Kjsten Drew *California English*, Jan/Feb 1989

A Driving Force: Frank Sparkes Elementary School (Winton)

Sparkes Elementary School is located in Winton, some 70 miles northeast of Fresno, and serves 670 students in fourth through eighth grades. The primary occupations in the area are agrarian, with most parents reporting low incomes (over half of the students' families have incomes below the national poverty level). Forty percent of the students are Caucasian, 45 percent Hispanic, 10 percent Asian, three percent black, and two percent Filipino. Achievement scores are consistently low, and many students never complete their education (the nearby high school has a 60 percent drop-out rate). Sparkes has been selected as a Middle Grades Partnership School.

Dates of Visit: February 8-9, 1990. Principal: Mark Walker.

Getting From There to Here

"At this school we focus on ideas and solutions, not problems," says Mr. Walker, the principal. This philosophy has guided him throughout his seven years at the school. He also has a vision of what's best for students and believes that clear delineation of the vision — plus teacher buy-in to it — has made a number of positive changes possible.

Mr. Walker describes a six-part process continually used to implement his vision: 1) personnel — hire the best teachers, and after two years don't renew those not doing a good job; 2) environment — ensure adequate instructional support so that teachers can do their jobs; 3) general openness — encourage talk about every aspect of the school; 4) conferences — send teachers to key conferences, then ask them to share what they've learned with colleagues through staff inservice; 5) create a blue ribbon special task force whose goal is to assist staff "to improve our middle school"; and 6) monitor state publications — "If they say we should be doing something, we do it."

This process, says Mr. Walker, has fostered a climate for change. One result is interdisciplinary instruction. Started at Sparkes after *Caught in the Middle* was published, this innovation continues to evolve and expand. Because the school was too small to accommodate a true grade level teaming arrangement (where teachers share a common group of students), faculty began by deciding that core classes would be the vehicle for promoting interdisciplinary instruction that combines language arts and social studies. The first year one teacher volunteered to teach in a core; the following year other staff members were assigned to teach core, based on their credentials. "We scheduled all our sixth and seventh graders into cores," the principal explained. "Once we got started we just couldn't stop." Eighth grade also has a smaller core that combines literature and language arts. All teachers at the school teach seven periods with no preparation time.

Last year the faculty met to clarify and define what interdisciplinary instruction meant at Sparkes. "We decided that it wasn't about team teaching," said Mr. Walker. "Our ideas are much more expansive." Though they acknowledge that teaming is a part of interdisciplinary instruction, they believe the focus should be on thematic approaches to curriculum that encompass all subject areas. "This concept certainly makes sense in our core areas."

During the summer of 1988, Mr. Walker decided to place seventh and eighth grade teachers into two groups and have them meet monthly for a half-day planning session. "I didn't ask the faculty if this was something they wanted to do. I simply divided them up by grade levels, trying to get a mix of subject areas, and wrote a letter indicating this was what we would be doing." He also enclosed a planning guideline sheet for teachers to work from at each meeting.

Visiting A Planning Group Session

For this year's fifth planning meeting, four teachers gathered with the principal one morning in a small back section of the library. Participants were two math/science teachers who primarily taught seventh graders, one social studies teacher, and one language arts teacher. The latter two taught both seventh and eighth grade classes (but not seventh grade core classes).

The principal began the meeting by passing out a new planning sheet, which he encouraged them to try. "One of the teachers brought this in and thought it might work better than the one we've been using," he said. Because the sheet used the title "integration of instruction," they began discussing the difference between integrated and interdisciplinary instruction. The salient distinction, they concluded, is that integrated instruction relates to one teacher finding connections in content areas within the classroom, whereas interdisciplinary instruction involves teachers from various areas and is not restricted to a single classroom.

The social studies teacher said he would soon begin teaching the American Revolutionary War period. He asked if anyone could suggest a tie-in. After a pause, the principal prompted the group by urging them to focus on higher order thinking skills. Think about the forces that brought about the American Revolution, he said. How were human needs being denied during the early part of this century? He suggested parallels to Eastern Europe today. "You could bring to light things kids aren't even aware of — food shortages, for example. The kids may not realize that the Communists have failed in many ways, including not meeting basic human needs. This is a great topic! You could have a writing project where students analyze and make judgments about how the denial of basic needs can lead to revolution. I can also see tying in language ideas."

The social studies teacher asked the language arts teacher if he had any materials that would fit into the topic of revolution.

"I'll be starting *A Wrinkle in Time* next week," came the answer.

"Do any of your materials have connections to black history?"

"Last month I worked with my classes on Martin Luther King's speeches, but I don't have anything further planned."

"I'm about to use a film on the Jackie Robinson story," the social studies teacher explained. "It's old, but it's well done and projects a lot of what was overcome by one person."

"Oh, well I can teach a critical thinking lesson I have that's centered around Jackie Robinson — a three-page reading lesson with a handout for students."

"I also just started a Junior Scholastic article on prejudice. A supplementary article requires the students to put themselves into 10 different situations and describe how they'd react. The theme, again, is black history . . . "

The principal interrupted. "You keep coming back to the theme of revolution that you'd written down, but you're talking about black history. Let's decide on the theme and write it down. I think you can talk about human needs and connect both of them."

The language arts teacher sighed. "We started the year with a bang when we all did the medieval theme. We had swords and shields all over campus, there was a big presentation, we had so much. But we've had trouble keeping the momentum. It's hard to focus on a theme. This might work, but I really feel I have so little to do. I mean, the Jackie Robinson critical thinking lesson is only one day. I loved the medieval thing, but there doesn't seem to be anything else. I'm frustrated."

The principal commented on a general lack of materials. All four teachers expressed dissatisfaction and a need for assistance in obtaining teaching materials to support their achievement goals. The meeting concluded with the principal encouraging the teachers to continue looking for ways to match content through broad thematic units. "It's not going to be easy. There are a lot of things you'll need. But each time we do something, we become a little better at it. You've done a lot of work today, and I think you've made some important strides forward."

Brainstorming Adds "Pizzazz"

The principal felt the meeting went well. "People sat down and did some thinking together. They threw out all kinds of ideas. That's much more than what they do on their own." He is sure that these meetings reinforce the process of change. "Alone in the classroom, you always do things the same way. When you talk to other teachers, you see how they do things and you ask questions. There is a constant challenge for teachers to ask, 'Why are you doing things this way?' And now at Sparkes the networking between teachers has increased."

Teachers have suggested meeting more often so they can brainstorm even more thematic connections.

He related a story about one of the teachers who during one of the meetings had challenged another to "loosen up a bit." "Why don't you let the students draw some pictures in your classroom?" she suggested. A few days later, the teacher had come by her room and said, "I've ordered myself some crayons!"

The teachers' response to these meetings is generally positive. "This is the first time in this school that we have all had to get together and plan programs," said one, obviously pleased. Another talked about the value of hearing what other teachers are doing in their classes. "I can adjust my curriculum to fit theirs where possible. From these meetings I have an idea of what is going on in the entire school." One teacher described the impact on curriculum: "I keep finding ideas I can use, and that's exciting. Talking together in these meetings is much more creative than doing it on your own. I think we have better curriculum as a result. There's certainly much more pizzazz!" Teachers credit the principal with this progress. Said one, "He really is the driving force here, the one who pushes us to work together."

Mr. Walker is conscientiously moving the faculty to expand their use of thematic curriculum in their classrooms, at the same time encouraging them to get the students using higher order thinking skills. "I'm doing some very mechanical things to move them forward. I sit in on every meeting at least for the first hour, and I try to force them to look at what they're doing and consider ways to do it a bit differently. In the meeting today I was pleased to see the teachers asking one another what they could do to complement the idea of revolution."

He has worked hard, he says, to instill in his teachers the idea that they can take novel approaches in their curriculum. "For example, my social studies teachers never considered having their students do essays on social studies issues. Their response was always, 'I'm not a language arts teacher!' I just kept pushing them. Then I had one of the language arts teachers demonstrate brainstorming with them. Next she demonstrated clustering and the actual writing process. When she got to editing, they balked, and the same response came out, 'Wait a minute, we're not language arts' teachers!' Finally, I got them working together so that writing happens not only in language arts, but also in social studies. And I have to emphasize that the teachers are working together. Sometimes the social studies teacher does all the lead-in with a social studies topic, then has the language arts teacher go through the writing, using that same topic."

He finds it gratifying that the teachers have suggested meeting more often, feeling that they could make even more connections. "But I just don't know if we can find the budget to do it. I have to pay for subs each time we meet, and that adds up."

Visiting a Seventh Grade Core (Language Arts-Social Studies) Class

Students enter the classroom and sit in their assigned seats. Desks are arranged in groups of four, with eight groups total. The teacher has the students recite their vocabulary words, then write sentences using the words. These two activities take up the first 15 minutes of class time.

In one corner of the room the teacher has placed a 4' x 8' piece of plywood on top of four desks, which support it at its corners.

Covering the underside of the plywood is butcher paper, pasted on. As students finish writing, he excuses one group of four who gather paint, brushes, and water, then place them near the plywood.

Now the teacher puts several chalk lines on the board at the front of the room for the rest of the students, creating a tic-tac-toe-like chart. In the top right-hand boxes he writes 'Sistine Chapel' and 'our mural.' In the left-hand side boxes he writes 'theme' and 'featured.' The four students who were excused earlier return to their desks. The following exchange occurs in a recitation-type dialogue between the teacher and students:

T: "What we are doing here is recreating the ceiling of the Sistine Chapel. While you're under there (he points to the plywood 'ceiling' in the corner of the room), I want you to imagine what it was like painting the Sistine Chapel. Now, last week you saw a video about the Sistine Chapel — who made it, who painted it?"

S: "Michaelangelo!"

T: "Right. Michaelangelo had something in mind when he was drawing all those pictures up there. What do you think that was? What was his central theme?"

S: "Scenes from the Bible."

T: "Perfect! Scenes from the Bible. Why would he choose to paint those?"

S: "The Church was important then."

T: "Thank you for raising your hand. Yes. That's probably true. The Roman Catholic Church was a big deal back then and it played an important role in people's lives. People's lives revolved around the Church. Now, do you think it was Michaelangelo's idea to do that?"

S: "It was the people's idea who paid him."

T: "Exactly. People paid him. This was the Renaissance. This was the time that big families, like the Medici family, were paying artists like Michaelangelo and Da Vinci huge sums of money to have pictures painted. There was probably a great deal of money in this for Michaelangelo. And scenes from the Bible being painted in a church — what are churches for, basically, but to carry on the work of the Bible? So yes, that was the theme. Now, remembering our work from a week ago, what were some of the scenes from the Bible up on that ceiling?"

S: "Adam and Eve."

S: "Angels."

S: "Naked bodies."

S: "Gods."

S: "Clouds."

S: "Animals."

S: "Garden of Eden."

(The teacher writes these on the board under the column "Scenes from the Bible.")

T: "Now, we've got all these scenes. What was the reason they were featured again?"

S: "They were important to the people."

T: "Yes. These things were valued by the people. Now we're going to shift to something different."

(The teacher now moves back to the blackboard and points to the column labeled "our mural.")

T: "Our theme, now, instead of 'Scenes From the Bible,' is what?"

S: "Scenes from *A Wrinkle in Time*."

T: "Okay. Good. Now let's do just like we did over here, except let's list scenes from *A Wrinkle in Time*. This will be a good exercise for you to remember important times from the book for your upcoming test."

Students again call out the following various scenes and in a lively interchange, the teacher puts them on the board: "Brain ('It')," "Aunt Beast," "Ms. W.," "Happy Medium," "Man With Red Eyes Falling Star," "Black Hole," "feather," "column," "space," "CC II," and "Tesserett." The finished chart appears as below:

	Sistine Chapel	**Our Mural**
Theme:		
	Scenes From the Bible	Scenes From *A Wrinkle In Time*
Featured:		
	Brain ("It")	Adam and Eve
	angels	Aunt Beast
	naked bodies	Ms. W.
	Gods	Happy Medium
	clouds	Man w/Red Eyes
	animals	Falling Star
	Garden of Eden	Black Hole
		feather
		column
		space
		CC II
		Tesserett

T: "Now, what we're going to do in our groups is this. I'm going to pass out one sheet of paper to each group. These are your mini-murals. You're going to create a mini-mural, the four of you in each group, and I want to see four heads close together, working on the same piece of paper. You're going to do this in pencil. Then when I call your group over, you'll get a chance to work on our mural, our 'ceiling.' You'll get to be Michaelangelo."

The teacher passes out paper. Student groups choose one scene from those listed above under *A Wrinkle in Time* and begin to discuss how they will draw it. Students are busily engaged in the activity, and after about 15 minutes the teacher calls one group to come and begin work on the plywood 'ceiling.' The students take their mini-mural, lie on their backs on the floor under the plywood, and begin to paint. The groups rotate through the process for the next hour. The teacher indicates there will be time again tomorrow to continue.

The teacher is pleased with the lesson. Afterwards he says had it not been for the group planning meetings he might not have thought to combine the Renaissance with *A Wrinkle in Time* the way he did. "Actually, I was probably stretching it a bit, but I think it really worked. It got the kids looking at parallels and seeing how you can take two things and look at them in similar ways. This is what the principal is trying to get us to do. The kids certainly experienced the Sistine Chapel and *A Wrinkle in Time*, lying there on their backs, didn't they?"

Looking Back

"When I wrote that letter last summer, I had an idea of what I wanted to accomplish, but I didn't really anticipate how it would all transpire," says Mr. Walker. "I think we've achieved a lot." Teachers agree. One recalled how she had laughed when she first received the principal's letter. "There was so much he wanted to achieve. I thought, 'Sure,' and put it aside. But we have done a lot. Before, there was no communication at all. Now, the PE

teachers talk about the sharing of the playing field. I talk to the teacher next door — in fact, we're planning a lot of our lessons together. I went to her and said, 'Help! I've never taught language arts before!' She became my mentor. This wouldn't have happened before the principal pushed us to do this."

Mr. Walker does see some problems. One is the scarcity of good materials. "There just aren't enough materials to support the teachers in working across disciplines. Most of the stuff we've looked at is poor, and the state is so far behind in texts. Since this problem won't change soon, the teachers will just have to continue to share and devise their own ways of meshing until the resources catch up."

Another problem is heterogeneous grouping. "We've been heterogeneously grouped for a while now, but it is a real challenge. Some teachers use it as a stumbling block, arguing that IDI is challenging enough without also having to teach a diverse group of students. They're quick to ask me, 'What do I do with these kids?'"

He is also very concerned about test scores. While student scores are good compared to those at similar schools, they are low in terms of absolute state and national rankings. "Unfortunately, the state focuses on test scores. I'd love to be able to do interdisciplinary instruction and point to test scores that are good and getting better. Unfortunately, our scores aren't good, and I worry that maybe this isn't the thing I should be doing. Still, I realize that the teachers are doing a great job. I guess I just need to relax a bit."

Finally, he is aware that he may be straining people's capacity for change. The school has recently put in a whole new computer system that affects every classroom teacher in bookkeeping tasks (attendance, grades, etc.). Because of huge enrollment growth, a new school is being built — scheduled for completion within the next two years (Mr. Walker is directly involved in the planning, designing, and readying of the school). And the district is reconfiguring its boundaries. "All of this is having a tremendous effect on my teachers. I have to be careful about how much I load on them, and — especially — I have to be supportive through this time."

From Here to There

If one word can sum up this principal's approach to interdisciplinary instruction it is patience. "I recognize that it's going to take time," he says. "We just have to put one foot in front of the other." He envisions teachers functioning around thematic units, working closely together, and having the students use higher order thinking skills. Despite a slower pace than he would like, his commitment has put Sparkes well on its way toward meeting these goals.

Teacher Empowerment: Chaparral Middle School (Diamond Bar)

Chaparral Middle School is located northeast of Los Angeles in Diamond Bar. The campus sprawls across hilly terrain, surrounded by a neighborhood of upper-middle class homes. The buildings are single story with an open-space design. Some portable classrooms have been placed near the main building. Enrollment is 1,250 students, grades six through eight. Most come from families with middle to high incomes, and achievement levels are generally high. The student population is 53 percent Caucasian, 28 percent Asian, and 11 percent Hispanic, with the remaining eight percent black or of other heritage. The school anticipates a decrease in eighth-graders next year as approximately 200 students move to a newly constructed middle school which opened this year for sixth and seventh graders and will now add eighth graders. Chaparral is a regional Foundation School.

Dates of Visit: March 7-9, 1990. Principal: Roger Skinner.

"We've Been at This a Long Time"

"Fourteen years ago our principal put us into teams," recalls one of Chaparral's teachers. "After so long, teaming is thoroughly ingrained. People know it's part of the school and do it without really thinking about it." Though the same principal — Mr. Skinner — remains, teachers have come and gone over the years, and team composition has shifted. But currently, all three grade levels have teams of three or four teachers each, generally in language arts, social studies, science, and mathematics. Each team has a common preparation period for planning, and each is responsible for a four-hour block of time. "That time is theirs," explains Mr. Skinner. "They 'own' it. They can do anything they want with that four hours, as long as it meets two criteria: what they do must be educationally sound, and the teachers must be able to defend it."

Mr. Skinner came to Chaparral with a vision. After long experience at the elementary level, he was convinced that students on their way to middle school are still young children who need strong support and adult figures with whom they can identify. "I never could understand how students could go practically overnight from having one teacher all day to having six. It just didn't make sense to me." Shunning the idea of a mini high school, he saw teacher teams as one way of providing the nurturing he felt kids at the intermediate level needed. He set up this innovation with the full support of the district superintendent.

Teachers Take Responsibility

From the start, teaming was intended to benefit not just students, but teachers. "I felt that if teachers were given real responsibility for a core group of students as well as real control over time, then they would be empowered," said Mr. Skinner. "And when you empower people, miracles occur."

Teachers at Chaparral wholeheartedly agree. They have high praise for the teaming concept and are particularly enthusiastic when describing the advantages of freely adjusting their four-period block to accommodate curriculum and/or special needs. One teacher described how her team helped meet the demands of her biology project: "Last year when I was dissecting frogs, I realized that I needed students for a four-hour time frame. I talked to my team members and we worked out a plan where each of us kept students for the full four hours, rotating them each day so that all students would get their day in the lab. What a relief. I only had to set the lab up once each day, I had students' full attention, and I was able to begin and end a lab within the same day. It was wonderful!" Other team members said this experience caused them to look

at curriculum in an entirely different manner, unbounded by the time frames they were used to.

Many teachers spoke of being able now to assume greater responsibility for the care, well-being, and development of students assigned to their teams. Said one: "My team develops a lot of activities for the students to participate in as a group, we talk to them when they need someone to confide in, we try to handle any discipline problems ourselves, and we meet with the parents as a team."

The team meetings with parents struck virtually all the teachers as beneficial: "Parents don't get just one teacher talking to them about their child," said one. "They get three or four. It makes it easier for them to see that we genuinely care and are concerned. And they get the advantage of meeting with most of their child's teachers all at once. If there's a problem, they are more likely to provide support rather than chalking it off to 'Well, that's just one teacher's opinion.'"

Other changes have also been a boon to teachers. For example, the principal decided to take the students' outside lockers, cut them down from double layers into single units, move them indoors, and use them as dividers between classrooms (the school has an open-pod arrangement often found in elementary schools). Intended or not, teachers found that this move increased both their control over students and their ability to be responsible for them. "I know where each of my students' lockers is, and if someone forgets a book, I don't have to excuse the student to go out and roam the hallways; I simply go get the book out of the locker," said one. "As a team, we determine when students can take locker breaks," said another, "and the entire team breaks at the same time. This has cut down student problems, noise in the hallways, and unpreparedness."

Clearly intentional is the power teachers de rive from being asked to provide input into the selection of new team members when someone leaves. As one teacher noted, "I was interviewed when I came here by five teachers. They were included in the process. It gave them a buy-in on the choice. I think it made them more inclined to make sure that their choice worked." Said another, "It was a great benefit to me as a new teacher seven-and-a-half years ago. I felt special, as though I had been carefully selected. I have enjoyed working with experienced teachers. I never looked bad. I never went too far out because of their guidance and support. I now work with other new teachers in the same way. I'm here for them."

An Interdisciplinary Approach

Interdisciplinary instruction, teachers say, was not planned but evolved as a logical extension of the teaming process. "As we shared curriculum, we began seeing some interesting overlaps," said one teacher. "That encouraged us to interface." Another added, "By now most of us have attended several workshops where thematic learning is stressed. It really makes sense, and the structure for it is already in place here."

The principal has strongly encouraged this evolution. "I look at it as a process rather than as something that has to be done," he stated. "Fully implementing an interdisciplinary approach will take years, not months. I'm content for it to move along at its own pace, with teachers being empowered to make it happen rather than doing it just because I say so. Sometimes it takes going through, or around, to get to the finish line."

Mr. Skinner's perception is that many schools have trouble implementing interdisciplinary instruction via teaming because they move too quickly, trying to do too much, too fast. "Schools want to sacrifice quality for quantity. You don't move forward when you move too quickly. Their concept may not be bad, but their process can be."

Chaparral, he says, is really just on the threshold of an interdisciplinary curriculum, even though teachers have subscribed to the idea for some time. "In five years I want to see kids empowered by teachers — in terms of thinking skills, decision-making, and real-life skills. It's all really an outcome of teachers working and planning together." Mr. Skinner sees tremendous progress being made, particularly around thematic ideas, even though he doesn't think teachers fully understand the power available to them. "Teachers are going to have the opportunity to teach about the real world, about what is happening now, then make connections back through history." He sees his role as one of a facilitator: making suggestions, throwing out ideas, then allowing the teachers to grab the ball and run with it. "I'm excited! We have a lot to do, but the payoff will be having students enthused about learning and about learning to learn."

In a handbook sent to all parents, Mr. Skinner details Chaparral's emphasis on interdisciplinary teaming. He includes a chart that illustrates the school's vision for a collaborative environment (attachment 1) and an illustration of how an integrated core curriculum occurs through teaming (attachment 2). "I want parents and students to be aware of what our philosophy is here. And I want teachers to know that I am advertising."

Teachers Integrate Curriculum: A Gradual Process

Language arts and social studies have taken the lead at Chaparral as teachers have implemented various complementary units. Teachers find these subject areas the easiest places to start, since the many topics involved in social studies offer intriguing assignment choices that can be readily tied to reading and writing skills. Despite an interest in including more math and science in interdisciplinary projects, one teacher noted: "I don't connect well with math and science. It's a lot harder to find ways to fit these into what we're doing." The science teacher, however, thinks this difficulty will be overcome. He pointed out that the new state frameworks for science are organized around thematic instruction. He sees this as a spur toward interdisciplinary instruction and anticipates that by next year, each grade level will have two thematic units that integrate all four subjects with a major emphasis on writing in every class with every team.

In general, teachers feel that progress is gradual, but steady. One seventh grade team member summed it up as proceeding "in little tidbits" as teachers augment one another's curricula wherever possible. Students doing maps and scale measurements in social studies, for example, would review how to read a ruler in their math class. Similarly, Islamic art in social studies would be complemented by tessellations (geometric shapes) and mosaics in math. As the teacher explained, "We're searching for connections across our curriculum, but at the same time, we don't want to sacrifice the things we need to teach."

Sample Units: From Greece to Earthquakes

Language arts and social studies teachers integrated curriculum this year when teaching the Civil War. One approach was to bring the two classes together, with one representing the North, the other the South. "We did a simulation of the war, giving the students a real experience of what it was like," explained one of the teachers. Students were given roles to play where they adopted "typical" attitudes and had to solve various problems the teachers posed.

For example, one problem involved the issue of California being admitted as a free state. After debating the problems, the group as a whole had to decide if they were going to war or not. "It was a difficult task for the students," commented the teachers. "They really had to get into the time of the Civil War and wrestle with some pretty tough issues. A lot of anger occurred, but they stuck with it. Even though they ended up in war, their understanding increased tremendously." Several writing assignments followed, focused on feelings about the war. Students read *Across Five Aprils*, then drew characters and created illustrations for the novel. A guest speaker came and did several Civil War reenactments.

Another social studies/language arts team chose to do the Civil War unit a bit differently, with students creating newspapers that could have been published during the war, chronicling major events. "Students loved this project, and I think it really helped them learn the history faster and easier," said the social studies teacher.

For a unit on Japan, a social studies/language arts team had the students read The Master Puppeteer (set in 18th century Japan) as they studied Japanese history. At the end of the unit, students read *1,000 Cranes* and did origami projects (seventh grade teachers had received inservice instruction on origami from one of the eighth grade teachers). Eighth grade teachers are looking forward to this spring when students will study the Holocaust while reading *The Diary of Anne Frank*.

For several years teams have joined together to produce one very big unit on the Greek Olympics. "The social studies teachers teach about ancient cultures, the language arts teachers teach mythology, and the math teachers teach metrics," explained the assistant principal. "This year several of the teams are changing their focus to medieval times." They plan to read *The Proud Taste of Scarlet and Minevar* (a humorous depiction of Henry VIII and Helene of Aquitane) in language arts, contrast the plague-of-old with modern-day plagues (AIDS) in science, and build scaled replications of castles in math (using a variety of items such as sugar cubes, graph paper, tongue depressors, and Legos). They'll hold a Renaissance Faire and a medieval tournament, complete with colors, armor, and events. And everyone will have lunch at a medieval restaurant. "Teachers are very excited about this unit. I can't wait to see it myself!"

Recently, a science and math teacher have developed what they call "Quake Odyssey," which they patterned after "Math Odyssey," a combined effort by math teachers to encourage students to work together to solve problems. The science teacher explained: "I paired up with another teacher to get a grant for our seismograph machine. The students work in cooperative groups and use clay to mold the earth. We use ratio, we plot coordinates, and we study proportion. We investigate earthquake waves by using slinkies, then we plot the waves and chart effects. We measure quakes logarithmically, produce seismograms and study them." Even the language arts teacher has joined in, having students read *The Night of the Twister* and showing a laser presentation on tornadoes. "I love the crossover of activities and the flexibility that being in a core reinforces," said the science teacher.

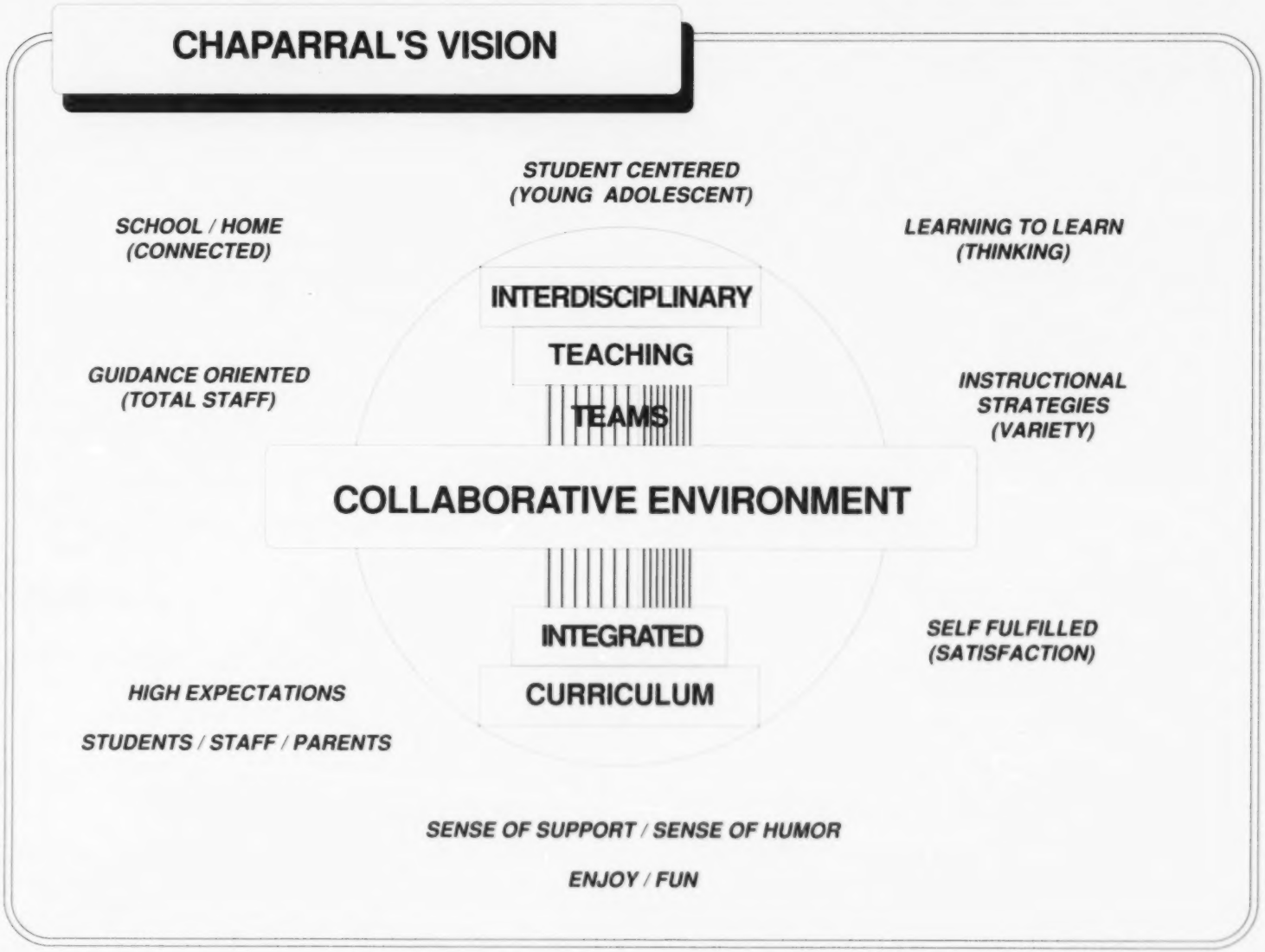
Reflecting Back

Looking back over the 14 years since introducing teaming to Chaparral, Mr. Skinner expresses satisfaction. "A lot of what I do is intuitive. I did many of the same things in elementary school, such as taking down walls and putting people on teams. It's really not much different. My decision-making process is driven by what I think makes kids successful." He is particularly pleased with the teachers' willingness to work together toward common ends and their ingenuity in finding successful ways to work with students. "If there is one piece of advice I could give, it would be this: find ways to empower teachers. Strong support for teachers makes the biggest difference for kids. We all know it. We have to be committed to it."

One concern for next year is the issue of teaming in eighth grade. "Because I am losing over 200 students, I will lose about seven teachers," said Mr. Skinner, "This is a good time to evaluate what we're doing at this grade." He is seriously considering disbanding teams in the eighth grade so as to ease the transition to high school. "We need to get the eighth-grade students used to moving through a high school day, period by period. In high school, students really do have to be independent in a way that we're not training them for. Perhaps by backing away from teaming, yet still providing an environment that is supportive and nurturing for the students, we can do a better job before turning them over to the high school. It's a hard choice to make." Teachers agree and make arguments both ways.

The principal is also concerned about teachers' lack of time. "Teachers need more time to be creative. There is a lot of pressure to perform. Much of it is pressure they put on themselves. But it means that teachers don't get the fun of standing back and enjoying what they are doing." Providing more time would take money, and there isn't leeway enough in the district budget. "This has been a problem for a very long time in education."

But the district is very supportive of Chaparral's interdisciplinary teaming efforts. In fact, the superintendent would like to expand the idea by having teachers sign contracts for three- or four-year stints in teams, with each teacher assuming responsibility for a major area of specialization. For example, one teacher would specialize in program design, another in evaluation. As he stated, "This is all pretty amorphous at this point, but I think it would be good for the team and good for the teachers' careers. In addition to the common shared tasks that all team members would take part in, each would have some additional skills that would gain them respect. I think they could put together a much better package this way."

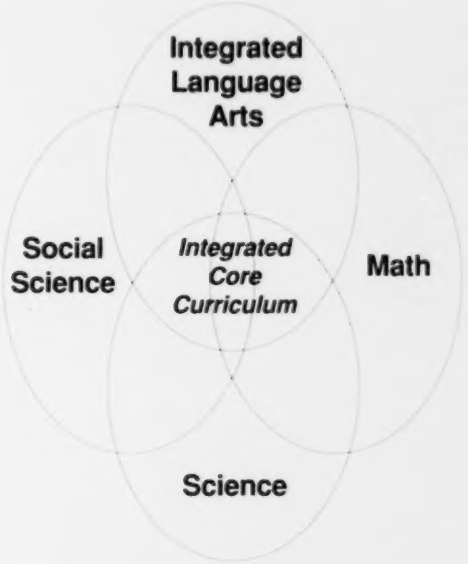

CHAPARRAL'S VISION
STUDENT CENTERED
(YOUNG ADOLESCENT)
SCHOOL / HOME
(CONNECTED)
LEARNING TO LEARN
(THINKING)
INTERDISCIPLINARY
TEACHING
TEAMS
GUIDANCE ORIENTED
(TOTAL STAFF)
INSTRUCTIONAL
STRATEGIES
(VARIETY)
COLLABORATIVE ENVIRONMENT
INTEGRATED
CURRICULUM
SELF FULFILLED
(SATISFACTION)
HIGH EXPECTATIONS
STUDENTS / STAFF / PARENTS
SENSE OF SUPPORT / SENSE OF HUMOR
ENJOY / FUN

CHAPARRAL MIDDLE SCHOOL

INTERDISCIPLINARY TEACHING TEAM

COMMON SET OF STUDENTS

-Flexible Groups:
*heterogenous
*homogenous
-Equal Access
*At Risk
-Peer support & security
-"Whole School"



COMMON BLOCK OF TIME

- Active learning
- Flexible Scheduling,
- Integrated curriculum
- Interdisciplinary planning

COLLABORATIVE SET OF TEACHERS

-Common prep period: planning, guidance, R & R, communication
-Empower Teachers: Decision making, dignity
-Interdisciplinary Planning: Integrated Curriculum

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Far West Laboratory for Educational Research and Development
730 Harrison Street San Francisco, CA 94107-1242 (415) 565-3000

California League of Middle Schools
18012 Cowan Suite 110 Irvine, CA 92714 (714) 261-2567

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